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AIR FORCE OCCUPATIONAL MEASUREMENT CENTER RANDOLPH AFB
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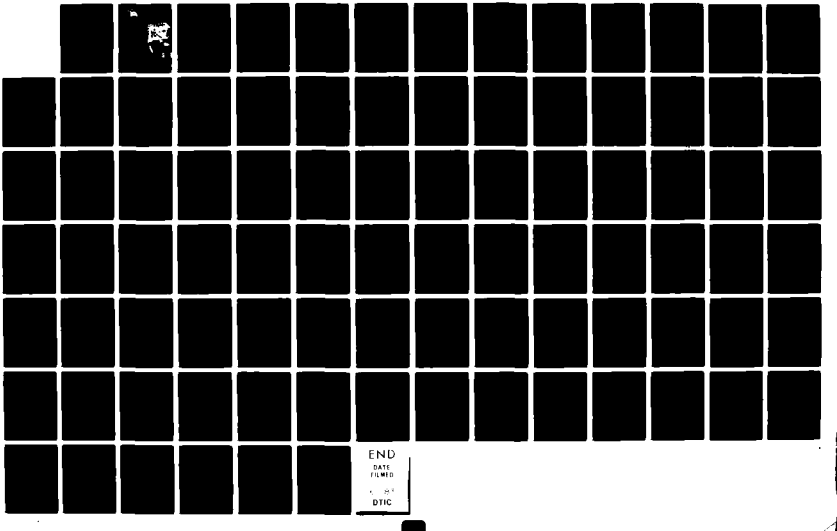

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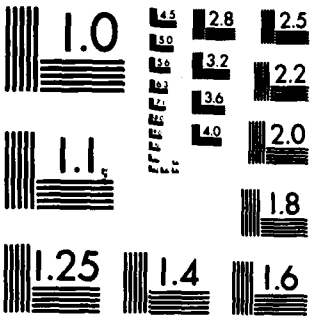

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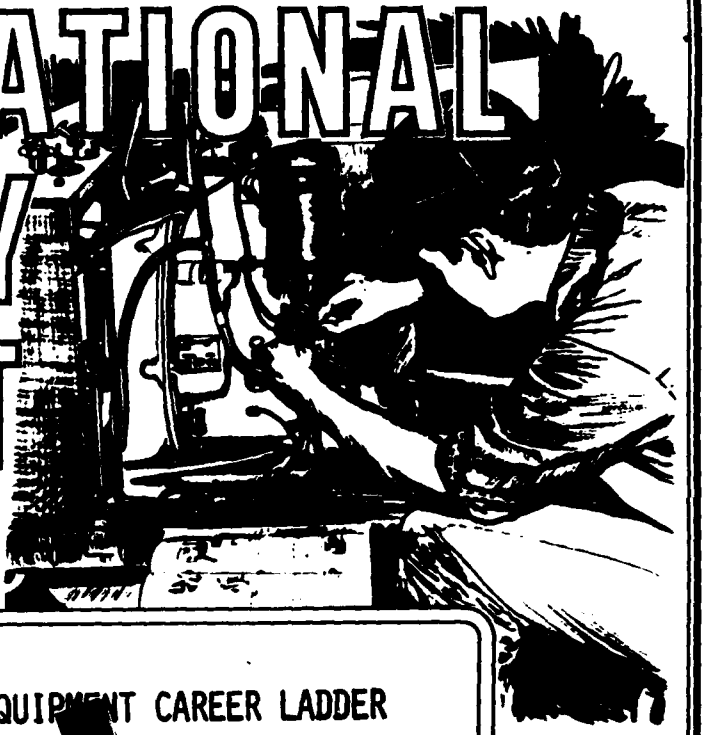
OCCUPATIONAL SURVEY REPORT



AEROSPACE GROUND EQUIPMENT CAREER LADDER

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OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT CENTER
AIR TRAINING COMMAND
RANDOLPH AFB, TEXAS 78150

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3	AFLMC/LGM	2	2		2
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23	HQ ESC/DPTE	2	2		2
24	HQ MAC/DPAT	3	3		3
25	HQ PACAF/DPAL	1	1		1
26	HQ PACAF/DPAT	3	3		3
27	HQ SAC/DPAT	3	3		3
28	HQ SAC/LGMQ (ATCLO)	1	1		1
29	HQ TAC/DPAT	3	3		3
30	HQ TAC/DPLATC	1	1		1
31	HQ USAF/LEYE	1	1		1
32	HQ USAF/MPPT	1	1		1
33	HQ USAFE/DOUF	2	2		2
34	HQ USAFE/DPAT	3	3		3
35	HQ USAFE/DPATC	1	1		1
36	HQ USMC (CODE TPI)	1	1		
37	LMDC/AN	1			
38	NODAC	1	1		
39	3330 TCHTW/TTGX	5	2	2	9
40	355 TTW/MAT	2	2		2
41	388 TFW/MAT	2	2		2
42	1872 SCHS/TU	2	2	1m	1m/1h
43	3507 ACS/DPUI	1	1		
44	3785 FLDTG/TTFO	2	2		2

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PREFACE

This report presents the results of a detailed Air Force occupational survey of the Aerospace Ground Equipment career ladder (AFS 423X5). HQ ATC/TTQC and 3330 TCHTW/TTGX requested the study under USAF Program Technical Training Volume II, dated October 1981. AFR 35-2 contains the authority for conducting occupational surveys. Computer products used in this report are available to operating and training officials upon request.

First Lieutenant Kevin F. Morefield, Inventory Development Specialist, developed the survey instrument, Mr William Feltner provided computer support, and Captain Martin L. Fracker analyzed the data and wrote the final report. Lieutenant Colonel Jimmy L. Mitchell, Chief, Airmen Career Ladders Analysis Section, reviewed the report and approved it for release.

Copies of this report are distributed to Air Staff sections, major commands, and other interested training and management personnel (see distribution list). Additional copies may be requested by contacting the USAF Occupational Measurement Center, Attention of the Chief, Occupational Analysis Branch (OMY), Randolph AFB, Texas, 78150.

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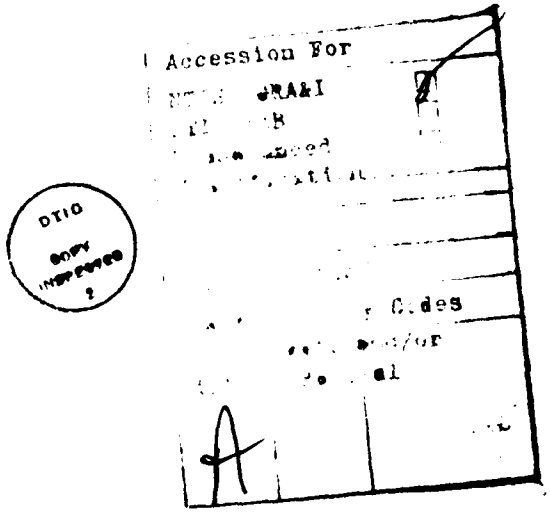

SUMMARY OF RESULTS

1. Survey Coverage: Thirty-six percent (2,629) of all Aerospace Ground Equipment (AFS 423X5) personnel were surveyed to determine the impact of new equipment and technology on members' jobs. The final sample included representative paygrade, skill level, and command groups.

2. Job Structure: The survey identified seven job clusters, 31 job types within those clusters, and one independent job type. Nearly half of the job inventories fell into an "AGE mechanics" cluster and performed fairly similar jobs, although some specialized in certain kinds of AGE maintenance. Other job groups included "nonpowered AGE mechanics," "AGE servicing and dispatch personnel," "TACS power generation personnel," "supply personnel," "NCOIC," "quality controllers," and "instructors."

3. AFR 39-1 Specialty Descriptions. The 3-, 5-, and 7-skill level specialty descriptions accurately summarized the jobs of career ladder personnel and reflected the separation of responsibilities between 7-skill level versus 3- and 5-skill level personnel.

4. Equipment Maintained By First-Termers: First-enlistment personnel maintained 13 different types of AGE including generators, air compressors, air conditioners, heaters, bomb lifts, hydraulic test stands, and nonpowered AGE. In addition, first-termers used eight different kinds of test equipment.

5. Training Analysis: The 423X5 Specialty Training Standard thoroughly covered virtually all tasks career ladder members perform. Similarly, the basic course Plan of Instruction gave good coverage of first-termer tasks, although some exceptions were identified. Some types of equipment included in the course were maintained by very few first-term personnel. On the other hand, several types of equipment not included in the course were maintained by large numbers of first-termers.

6. MAJCOM and POMO versus Non-POMO: Personnel generally performed the same tasks, regardless of which MAJCOM they belonged to or whether they worked under POMO. Equipment maintained, however, did vary by mission or MAJCOM; essentially, TAC, USAFE, and PACAF maintained similar equipment and SAC and MAC maintained similar equipment. As expected, equipment maintained by POMO personnel paralleled that maintained in TAC, USAFE, and PACAF, while non-POMO equipment was similar to that in SAC and MAC. Job satisfaction was constant for those personnel who work only in the shop in POMO and non-POMO units; however, job satisfaction was lower for those personnel working in both shop and flightline in POMO units, as compared to non-POMO units.

7. Implications: Overall, the career ladder is fairly homogenous, suggesting no changes in the present classification system are needed. No significant revision of either the STS or POI appears necessary; however, training managers should review which specific types of equipment are included in the basic course, since some adjustment may be appropriate.

OCCUPATIONAL SURVEY REPORT
AEROSPACE GROUND EQUIPMENT CAREER LADDER
(AFS 423X5)

INTRODUCTION

This is a report of an occupational analysis of the Aerospace Ground Equipment (AGE) career ladder, AFS 423X5, completed by the Occupational Analysis Branch in May 1983. The Branch last surveyed the career ladder in 1977.

Specialty Background

The AGE career ladder was first created in 1959 as AFS 421X3, Aircraft and Missile Ground Support Equipment Repairman. Two years later, the career ladder was renamed Aircraft Ground Equipment Repairman, and the following year was again renamed Aerospace Ground Equipment Repairman. No further changes occurred in the career ladder from 1962 until 1976 when the specialty was redesignated 423X5 but retained the name of Aerospace Ground Equipment Repairman. Classification of the AGE career ladder has remained essentially unchanged from 1976 to the present.

Objectives

Since completion of the 1977 Occupational Survey, career ladder responsibilities have expanded to include bomb lift and diesel engine maintenance. Further, several units of aerospace ground equipment now contain solid state electronic control devices. As a result, career ladder tasks now cover a broader range of equipment, from maintenance of purely mechanical devices to repair of complex electronic printed circuit boards. Consequently, a major objective of this study was to determine the impact of these expanded responsibilities on career ladder training needs.

A second reason for this study was to address the concern of some career ladder members that specialty responsibilities have grown too broad for a single AFS. For example, the career ladder currently has responsibility for the maintenance of about 228 different kinds of equipment, and specialty members may need to be proficient in the use of 37 different kinds of test equipment. Thus, this study was also designed to determine if career ladder responsibilities needed to be shredded in some way.

SURVEY METHODOLOGY

Inventory Development

USAF Job Inventory AFPT 90-423-459 was the data collection instrument used for this occupational survey. Using the survey instrument from the 1977 survey as a starting point for the new task inventory, the developer and 21 subject-matter experts from four different bases refined and further developed the task list. In addition, 14 staff personnel directly associated with the management or training of personnel in this career ladder identified problem areas and questions to be addressed in analysis of the data.

Survey Administration

During the period April 1982 through September 1982, Consolidated Base Personnel Offices in operational units worldwide administered the survey to personnel holding the 423X5 DAFSC. Survey participants were selected from a computer-generated mailing list provided by the Air Force Human Resources Laboratory (AFHRL).

Each individual who filled out an inventory first completed an identification and biographical information section and then checked each task performed in their current job. Next, members rated the tasks on a nine-point scale showing relative time spent on each as compared to all other tasks. Ratings ranged from one (very small amount of time spent) to nine (very large amount of time spent).

Survey Sample

A representative sample of career ladder personnel was selected to participate in this survey. Table 1 shows how the final sample compared to the actual population of career ladder members in terms of MAJCOM distribution. As shown, the largest percentage of both the total population and the sample were assigned to the Tactical Air Command. The next largest groups were assigned to USAFE, Strategic Air Command, and Military Airlift Command while the remainder were spread out across several other commands. Overall, there is a very close correspondence between the sample and actual distribution across the commands.

The paygrades of both the sample and the total assigned population are shown in Table 2. Here again, a very close correspondence exists between the sample and the actual distribution of career ladder personnel. Especially noteworthy is the large percentage of inexperienced personnel reflected in the table; nearly two-thirds of the career ladder members were E-4 and below.

As can be seen from Table 3, 53 percent of the sample were first-enlistment personnel (1-48 months experience). Only 27 percent of the sample were career NCOs (97+ total active months of federal service), which suggests a rather low level of experience (compared to many other specialties) in this specialty.

TABLE 1

COMMAND REPRESENTATION OF SURVEY SAMPLE

MAJCOM	PERCENT OF ASSIGNED	PERCENT OF SAMPLE
TAC	38	40
USAFE	16	16
SAC	16	16
MAC	13	12
ATC	6	6
PACAF	6	5
AAC	2	1
AFSC	2	2
OTHER	1	2

TOTAL ASSIGNED: 7,276
TOTAL BOOKLETS MAILED: 3,132
TOTAL SAMPLED: 2,629
PERCENT SAMPLED: 36%

TABLE 2

PAYGRADE REPRESENTATION OF SURVEY SAMPLE*

PAYGRADE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE
AIRMAN	38	38
E-4	27	25
E-5	20	21
E-6	9	11
E-7	5	6

* COLUMNS DO NOT ADD UP TO 100 DUE TO ROUNDING.

TABLE 3

TAFMS DISTRIBUTION OF SURVEY SAMPLE

	MONTHS TAFMS		
	1-48	49-96	97+
PERCENT OF SAMPLE	53	20	27

Data Processing and Analysis

Once job inventories are returned from the field, task responses and background information are optically scanned. Other biographical information (such as name, base, AUTOVON extension) are keypunched onto disks and entered directly into the computer. Once both sets of data are in the computer, they are merged to form a complete case record for each respondent. Comprehensive Occupational Data Analysis Programs (CODAP) are then used to analyze the data.

CODAP produces job descriptions for groups of respondents based on their ratings of specific tasks. Job descriptions include DAFSC groups, TAFMS groups, and MAJCOM groups. These descriptions provide information on percent members performing and average relative time spent on each task. In addition to these job descriptions, the computer produces summaries that show how members of each group responded to each background item. Background items identify characteristics of the group, such as DAFSCs represented, time in career field, Total Active Federal Military Service, experience in the various functional areas, and equipment operated.

The CODAP automated job clustering program organizes individual jobs into similar units of work by comparing each individual job description in the sample to every other job description in terms of tasks performed and the relative amount of time spent on each task in the job inventory. The automated system locates those two job descriptions with the most similar task ratings and combines them into a composite job description. In successive stages, the system adds more members to the intial group or forms new groups. The resulting analysis of job groups identifies the number and charateristics of jobs within the career ladder.

The basic group used in the clustering process is the Job Type. A job type is a group of individuals who perform many of the same tasks and spend similar amounts of time performing them. When several job types are similar, they group together as Clusters. When a job type is too unique to group into any cluster, it becomes an Independent Job Type.

This kind of information is used to evalute utilization policy and the variation in jobs within the specialty. Such data may also have implications when used with other types of information, for career field documents and training programs. Such other types of information include independent ratings by supervisors on tasks, which are referred to as Task Factors.

Task Factor Administration

In addition to the job inventory, selected senior 42375 personnel also completed a second booklet for task difficulty or training emphasis. These task factor booklets were processed separately from the job inventories. Table 4 shows how the distribution of task difficulty and training emphasis raters compared to all assigned 7-skill level personnel by command. Note that the distribution of task factor raters generally corresponds to that of assigned 7-skill level personnel, although the percentages of training emphasis raters suggests slight over-representation of SAC and under-representation of MAC.

Task Difficulty: Task difficulty is defined as the length of time an average airman needs to learn to do a task. Given this definition, 82 7-skill level NCOs rated the difficulty of all tasks in the inventory. To ensure that the ratings were valid, each NCO's ratings were compared to those of every other NCO. A statistical measure of their agreement was computed and indicated they had rated the tasks similarly (the interrater agreement as calculated from standardized components of variance of group means was .97). Ratings were adjusted so that tasks of average difficulty had ratings of 5.0. These ratings were then used to compute a job difficulty index (JDI) for each group within the sample. These JDIs may be interpreted in light of the fact that a job of average difficulty would have a JDI of 0. Since the JDI was computed to reflect both the number of tasks performed and the average difficulty of those tasks, decision makers can use the index to compare the overall difficulty of different jobs performed by different groups within the career ladder.

Training Emphasis: A separate group of 142 7-skill level NCOs rated the emphasis needed in training first-term airmen on each task using a scale of zero to nine. Again, a statistical measure of their agreement was computed and indicated they had rated the tasks similarly (the interrater agreement was .99) which reflects a general consensus on what should be trained. Tasks highest in training emphasis had ratings of 5.01 or higher, while the average rating was 3.07.

TABLE 4

COMMAND REPRESENTATION OF TASK DIFFICULTY AND TRAINING EMPHASIS RATERS

MAJCOM	PERCENT OF 7-SKILL LEVELS ASSIGNED	PERCENT OF TASK DIFFICULTY RATERS	PERCENT OF TRAINING EMPHASIS RATERS
TAC	38	35	36
SAC	16	17	21
USAFE	14	17	17
MAC	13	14	8
ATC	9	10	8
PACAF	6	5	8
AFSC	2	1	2
AAC	2	1	0

FIGURE 1
CAREER LADDER STRUCTURE
AFS 42X5X
N=2629
INSTRUCTORS
(GRP265, N=25)
QUALITY CONTROL INSPECTORS
GRP105 N=51
MAINTENANCE INSPECTORS
(GRP386, N=15)
PROGRAM INSPECTORS
(GRP848, N=21)
NON-POWERED AGE MECHANICS
GRP098 N=65
PERIODIC INSPECTION PERSONNEL
(GRP640, N=11
WHEEL AND BRAKE MECHANICS
(GRP546, N=38)
AGE MCOICs
GRP175 N=423
TECH ORDER LIBRARY SUPERVISORS
(GRP705, N=10)
NON-POWERED AGE SUPERVISORS
(GRP361, N=12)
GENERATOR MINOR MAINTENANCE SUPERVISORS
(GRP536, N=153)
GENERAL MAINTENANCE SUPERVISORS
(GRP671, N=15)
GENERATOR AND TURBINE MAINTENANCE SUPERVISORS
(GRP614, N=36)
MINOR MAINTENANCE SUPERVISORS
(GRP468, N=69)
DISPATCH SUPERVISORS
(GRP462, N=11)
CREW CHIEFS
(GRP703, N=10)
AGE SERVICING AND DISPATCH PERSONNEL
GRP379 N=111
AGE INSPECTION PERSONNEL
(GRP[illegible], N=[illegible])
AGE DISPATCH AND SERVICE PERSONNEL
(GRP413, N=91)
AGE INSPECTION AND DISPATCH PERSONNEL
(GRP561, N=118)
TACS POWER GENERATION PERSONNEL
GRP147 N=45
TACS POWER GENERATION MCOICs
(GRP474, N=23)
TACS POWER GENERATION ELECTRICIANS
(GRP501, N=51)
TACS POWER GENERATION MOBILITY PERSONNEL
(GRP379, N=10)
AGE MECHANICS
GRP218 N=1232
MAINTENANCE SHIFT SUPERVISORS
(GRP655, N=20)
AGE SERVICING MECHANICS
(GRP677, N=119)
COMPRESSOR-HEATER MECHANICS
(GRP377, N=10)
HEATER MECHANICS
(GRP514, N=45)
GENERATOR-COMPRESSOR MECHANICS
(GRP332, N=[illegible])
HYDRAULIC SYSTEM MECHANICS
(GRP521, N=13)
BOMB LIFT MECHANICS
(GRP430, N=49)
GENERAL AGE MECHANICS
(GRP607, N=619)
GENERAL MAINTENANCE PERSONNEL
(GRP610, N=235)
SUPPLY PERSONNEL
GRP077 N=139
SUPPLY CONTROL PERSONNEL
(GRP326, N=10)
BENCH STOCK AND TOOL PERSONNEL
(GRP290, N=23)
SUPPLY MCOICs
(GRP541, N=41)
SUPPLY MAINTENANCE PERSONNEL
(GRP433, N=60)
= CLUSTER
= JOB TYPE
= UNDERGRADUATE JOB TYPE

SPECIALTY JOBS
(Career Ladder Structure)

One of the most important functions of the USAF Occupational Analysis Program is to identify the distinct jobs performed within a specialty as well as how these jobs relate to one another. The diversity of jobs is important to both the USAF Personnel Classification System and the training community. If jobs are too diverse or specialized, AFMPC may need to shred the career ladder or create new specialties while the training community may need to channelize technical training in the basic course, in follow-on courses, or in formal OJT.

Additionally, job information is used to analyze career progression patterns and specialty documents (AFR 39-1 Specialty Descriptions, Specialty Training Standards, the basic course Plan of Instruction, etc.) to identify needed changes. Job data are also used to identify morale (job satisfaction) problems, noteworthy trends, and issues needing management attention.

Overview

Analysis of the Aerospace Ground Equipment Repairman survey results showed there were seven clusters, a total of 31 job types within these clusters, and one independent job type. Figure 1 illustrates how these job groups related to each other. Following is a list of each group:

I. AGE MECHANICS (GRP218, N=1,132)

- A. General Maintenance Personnel (GRP610, N=235)
- B. General AGE Mechanics (GRP607, N=419)
- C. Bomb Lift Mechanics (GRP630, N=49)
- D. Hydraulic System Mechanics (GRP521, N=19)
- E. Generator-Compressor Mechanics (GRP552, N=46)
- F. Heater Mechanics (GRP514, N=45)
- G. Compressor-Heater Mechanics (GRP377, N=10)
- H. AGE Servicing Personnel (GRP677, N=118)
- I. Maintenance Shift Supervisors (GRP645, N=20)

II. NON-POWERED AGE MECHANICS (GRP098, N=85)

- A. Wheel and Brake Mechanics (GRP546, N=38)
- B. Periodic Inspection Personnel (GRP640, N=11)

III. AGE SERVICING AND DISPATCH PERSONNEL (GRP079, N=311)

- A. AGE Inspection and Dispatch Personnel (GRP561, N=108)
- B. AGE Dispatch and Service Personnel (GRP413, N=91)
- C. AGE Inspection Personnel (GRP345, N=11)

IV. TACS POWER GENERATION PERSONNEL (GRP147, N=95)

A. TACS Power Generation Mobility Personnel (GRP329, N=10)
B. TACS Power Generation Electricians (GRP501, N=51)
C. TACS Power Generation NCOICs (GRP474, N=23)

V. SUPPLY PERSONNEL (GRP077, N=139)

A. Supply Maintenance Personnel (GRP433, N=49)
B. Bench Stock and Tool Personnel (GRP290, N=23)
C. Supply Control Personnel (GRP326, N=10)
D. Supply NCOICs (GRP541, N=49)

VI. AGE NCOICs (GRP075, N=423)

A. Generator Minor Maintenance Supervisors (GRP536, N=153)
B. Minor Maintenance Supervisors (GRP448, N=69)
C. Generator and Turbine Maintenance Supervisors (GRP634, N=30)
D. General Maintenance Supervisors (GRP671, N=15)
E. Crew Chiefs (GRP701, N=10)
F. Non-Powered AGE Supervisors (GRP363, N=12)
G. Dispatch Supervisors (GRP462, N=11)
H. Tech Order Library Supervisors (GRP205, N=10)

VII. QUALITY CONTROL INSPECTORS (GRP105, N=51)

A. Program Inspectors (GRP848, N=21)
B. Maintenance Inspectors (GRP386, N=15)

VIII. INSTRUCTORS (GRP265, N=25)

Eighty-six percent of the 423X5 respondents grouped into these job groups. The remaining 14 percent (368 people) performed varied jobs in unusual settings or performed extremely limited jobs. For example, a few of these ungrouped personnel were the only instructors at their installations. A number of other ungrouped members were very junior personnel performing only a few simple tasks, such as painting or reflectorizing equipment.

Of the eight major job groupings, the "AGE mechanics" cluster was the largest, accounting for 43 percent of all career ladder personnel. These mechanics worked on powered AGE, and either worked on a wide range of equipment or specialized on one or two kinds of units, such as bomb lifts. "Non-powered AGE mechanics" formed one of the smaller job groups in the career ladder, taking in only three percent of the sample, and were noticeably unhappy with their jobs. These personnel either specialized in wheel and brake maintenance, or spent their time performing periodic inspections. "Servicing and Dispatch personnel," along with "AGE NCOICs" formed

the next largest groups (12 and 16 percent of the sample, respectively), while the remaining 26 percent of the career ladder were divided between "Tactical Air Control System mobile power generation personnel,'" "supply personnel," "quality control personnel," and "instructors."

Overall, the career ladder appears to have numerous common tasks, although the types of equipment are quite diverse. The majority of career ladder members worked on a wide range of AGE, while the rest mostly performed certain specialized functions such as mobility, supervision, or support activities.

Job Group Descriptions

I. AGE MECHANICS (GRP218, N=1,132). Forty-three percent of the sample fell into this cluster of maintenance personnel. Members of the cluster performed an average of 155 tasks covering a very wide range of aerospace ground equipment, including the following:

A/M32A-60 Generators
A/M32A-60A Generators
AM32C-86 Hobart Generators
MD-3 Generators
MD-3B Generators
MD-3M Generators
NF-2 Generators
AM/32C-10 Air Conditioners
MA-3 Air Conditioners
NHU-83A/E Bomb Lifts
MHU-83B/E Bomb Lifts
MJ-1 Bomb Lifts
MJ-1A Standard Manufacturing Bomb Lifts
MJ-2A Hydraulic Test Stands
MJ-1A Air Compressors
MC-1A Davey (diesel) Air Compressors
MC-1A Davey (gasoline) Air Compressors
MC-2A Air Compressors
H-1 Heaters
1H-1 Davey Heaters

In addition, tasks performed covered the gamut of AGE maintenance from painting equipment to troubleshooting electrical circuit malfunctions, including:

clean magneto or distributor points
remove or install carburetors
adjust magneto or distributor points
remove or install engine exhaust manifolds, seals, gaskets, or common hardware
adjust brake systems
perform brake system operational checks
remove or install engine fuel pumps
remove or install AGE brake assembly components
remove or install engine intake manifolds, seals, gaskets, or common hardware
remove or install fuel lines or fittings
isolate brake system malfunctions
remove or install AGE tire, tube, or wheel assemblies
clean and adjust spark plugs
remove or install AGE brake assemblies
remove or install ignition coils

remove or install engine fan belts
remove or install spark plugs
remove or install hinges, stays, or fasteners
clean contactor points
remove or install AGE fuel tanks or components
paint, stencil, or mark AGE
isolate malfunctions within electrical circuitry
isolate pneumatic system malfunctions

Within the "AGE mechanics" cluster were nine job types: (1) general maintenance personnel; (2) general AGE mechanics; (3) bomb lift mechanics; (4) hydraulic system mechanics; (5) generator-compressor engine mechanics; (6) heater mechanics; (7) compressor-heater engine mechanics; (8) AGE servicing personnel; and (9) maintenance shift supervisors. Of these nine groups, general maintenance personnel performed the largest number of tasks (286), followed by general AGE mechanics, who performed 151 tasks. Together, these two groups accounted for 58 percent of the cluster and one-fourth of the entire career ladder sample. Six of the remaining seven groups, as their titles suggest, specialized in maintenance of one particular type of AGE. The last group of shift supervisors were first-line supervisors who also performed a number of maintenance tasks.

A. General Maintenance Personnel (GRP610, N=235). As suggested by the large number of tasks performed, this group had the most difficult job in the career ladder, with a JDI of 21.5, far above average. These personnel may have performed a more complex job partly because they were more senior, having served in the career ladder an average of six years, compared to four years for the cluster as a whole, but they were not primarily supervisors. While 25 percent were 7-skill level personnel, only five of the 200 most time-consuming tasks performed by general maintenance personnel were supervisory. Seven of the tasks were administrative, but the remaining 188 were all actual maintenance tasks generally covering the same equipment discussed for the cluster as a whole, plus a few additions. This additional equipment included:

MD-3A Generators
MD-4 Exxes Generators
HA-1A Air Conditioners
A-1 Blowers
MJ-1 Hudraulic test stands
MK-3A Hudraulic Test STands
BT400 Heaters
HDU-13/M Heaters
Aircraft Jacks
Aircraft Towbars
Fuel bowsers
Hydraulic Servicing Carts
Liquid Oxygen Carts
Maintenance Stands
Nitrogen Carts
Oil Servicing Carts

Note that about half of these additional types of equipment consist of non-powered AGE.

Several tasks tended to distinguish general maintenance personnel from the rest of the cluster. These tasks were distinctive because a larger percentage of general maintenance personnel performed them compared to other groups in the cluster. In addition, these personnel spent more time performing these tasks than did members of other groups. Among the most distinctive tasks were:

adjust turbine engine temperature controls
remove or install bleed air load control valves
isolate power distribution panel malfunctions
remove or install suspension system component parts
remove or install suspension system components
adjust starter clutches
remove or install heater air control valve components
remove or install hydraulic high pressure system components other than pumps
remove or install differential component parts
adjust pneumatic unloader system components

The diversity of these distinctive tasks further illustrates the very wide range of maintenance these personnel perform.

B. General AGE Mechanics (GRP607, N=419). These personnel made up the largest single job type in the career ladder, accounting for 16 percent of the entire sample, as well as 37 percent of the AGE mechanics cluster. Not surprisingly, this group's job description was much the same as that of the cluster, but was somewhat narrower than that of the general maintenance personnel job type. In contrast to the previous job type, these personnel maintained few pieces of non-powered AGE and, on the average, performed only half as many tasks. Further, general AGE mechanics were more junior than the members of the previous job type: they averaged only three years of service in the career ladder and only eight percent were 7-skill level personnel.

C. Bomb Lift Mechanics (GRP630, N=49). All personnel in this job type indicated they spent most of their time maintaining bomb lifts. In fact, these personnel maintained bomb lifts almost exclusively, although they also maintained NF-2 Generators. Types of bomb lifts maintained included:

MHU-83A/E
MHU-83B/E
MJ-1
MJ-1A Standard Mfg
MJ-4

These mechanics had a job of average difficulty (JDI=13.8) and performed an average of 101 tasks, including:

perform bomb lift periodic inspections
remove or install steering system component parts
remove or install differentials
remove or install differential components
remove or install steering system components
weight check bomb lifts
remove or replace differential component parts
perform bomb lift visual or service inspections
remove or install AGE fuel tanks or components

Seventy-three percent of these personnel held the 5-skill level DAFSC, while the remainder possessed the 3-skill level. Group members averaged two and two-thirds years of service in the career field.

D. Hydraulic System Mechanics (GRP521, N=19). Another junior group was the hydraulic system mechanics. They averaged only two years of career field service and nearly 40 percent were 3-skill level personnel. Their job description consisted almost entirely of hydraulic systems maintenance tasks, such as:

remove or install hydraulic low pressure system component parts
remove or install hydraulic high pressure system component parts
remove or install hydraulic fill and bleed system components and component parts
remove or install hydraulic high pressure system pumps
remove or install hydraulic return system components
adjust hydraulic system valve assemblies
calibrate hydraulic gauges
remove or install hydraulic system valve assembly components
remove or install hydraulic system valve assemblies

Although members of this job type were highly homogeneous in terms of the tasks they performed, they were rather heterogeneous in terms of the equipment they maintained. No more than 37 percent maintained any given piece of equipment. Examples of equipment some members of the group did maintain included:

A/M32A-69 Generator
MJ-1A Standard MFG Bomb Lifts
AM27T-2 Hydraulic Test Stands
MJ-2A Hydraulic Test Stands

TTU-228/E Uni-Systems Hydraulic Test Stands
MC-1A Davey (diesel) Air Compressors
MC-1A Davey (gasoline) Air Compressors
Aircraft Jacks

Overall, the difficulty of this job was about average (JDI=12.2).

E. Generator-Compressor Mechanics (GRP522, N=46). This group was also very junior, being predominantly 5-skill level personnel with only two years of service in the career ladder. Like the previous two groups, they performed somewhat limited jobs maintaining the A/M32A-60 and 60A, MD-3, and NF-2 generators, as well as the MC-1A Davey gasoline and diesel air compressors almost exclusively. Also, like the two previous groups, their job difficulty was about average (JDI=11.5). Interestingly, this group spent more time performing turbine engine maintenance tasks than any others in the cluster. These tasks included:

perform gas turbine compressor periodic inspections
remove or install turbine engine combuster cans
remove or install turbine engine atomizers
clean turbine engine atomizers

F. Heater Mechanics (GRP514, N=45). Members of this group performed a slightly less difficult job (JDI=10.4). They spent most of their time maintaining the H-1 and 1H-1 Davey heaters, although they also maintained the MC-2A and MC-1A Davey gasoline air compressors as well as the NF-2 generator. Tasks that distinguished heater mechanics from others in the cluster included:

remove or install temperature selector valves
perform heating system operational checks
research TOs, charts, or diagrams for heating systems maintenance instructions
remove or install burner control valves
perform carbon dioxide (CO2) tests
remove or install heater fuel pumps

G. Compressor-Heater Mechanics (GRP377, N=10). This small group was somewhat more exprienced than the preceding groups, averaging four years of service in the career ladder and being almost entirely made up of 5-skill level personnel. Members of this group performed a job of average difficulty (JDI=13.0), primarily maintaining the MC-1A Davey diesel and gasoline air compressors, as well as the H-1 and 1H-1 Davey heaters. Diesel engine maintenance tasks distinguished these personnel from others in the cluster and included:

remove or install diesel engine fuel injector lines
remove or install diesel engine fuel injectors
remove or install engine intake maifolds, seals, gaskets, or common hardware
remove or install diesel engine fuel injector components

H. AGE Servicing Mechanics (GRP677, N=118). In contrast to the preceding groups, these servicing mechanics worked on a wider range of AGE, including:

A/M32A-60 Generators
A/M32A-60A Generators
MD-3 Generators
MD-3M Generators
NF-2 Generators
AM/32C-10 Air Conditioners
MHU-83B/E Bomb Lifts
MJ-1 Bomb Lifts
MJ-1A Standard Mfg Bomb Lifts
MJ-2A Hydraulic Test STands
MC-1A Davey (diesel) Air Compressors
MC-1A Davey (gasoline) Air Compressors
MC-2A Air Compressors
H-1 Heaters
1H-1 Davey heaters

Nevertheless, their job was no more difficult than those of the preceding group (JDI=12.0), possibly because the extent of their work on the above AGE was largely limited to performing service inspections.

Most of these personnel were 5-skill level members and averaged three years of service in the career ladder.

I. Maintenance Shift Supervisors (GRP645, N=20). Members of this job type were firstline supervisors who generally held positions as shift chiefs. Several members indicated they spent most of their time dispatching. Nevertheless, this group worked on a fairly wide range of equipment similar to that discussed for the cluster as a whole, suggesting that members were maintenance technicians who were also working as supervisors. Tasks that distinguished these personnel from others in the cluster were:

supervise AGE mechanics (AFSC 42355)
determine work priorities
counsel personnel on personal or military problems
prepare APRs
operate two-way vehicle radios
dispatch drivers to pick up or deliver AGE

Maintenance tasks characterizing this group included:

fuel AGE
perform hydraulic test stand visual or service inspections
inspect vehicles for safety of operation
position non-powered or powered AGE to aircraft
perform cabin leakage or pressure tester visual or service inspections
remove or install batteries
remove or install spark plugs
clean and adjust spark plugs
load test generator sets
perform AGE hydraulic system operational checks

While this group performed a more diverse set of tasks than most other groups in the cluster, the average number of tasks performed was fairly small--75 tasks compared to 155 for the cluster as a whole. In addition, the group performed a slightly less difficult job than most of the other cluster job types (JDI=10.9).

Finally, this group was the most senior in the AGE mechanics' cluster. Forty percent were 7-skill level personnel, while the rest held the 5-skill level DAFSC. In addition, the average length of service in the career ladder was six and two-thirds years.

II. NON-POWERED AGE MECHANICS (GRP098, N=85). Members of this cluster maintained non-powered AGE exclusively, including:

aircraft jacks
aircraft towbars
engine stands and trailers
fuel bowsers
gaseous oxygen carts
hydraulic servicing carts
jack trailers
liquid oxygen carts
maintenance stands
maintenance platforms
nitrogen carts
oil servicing carts
tank dollies
utility trailers

In spite of the large amount of equipment these personnel maintained, they actually performed only 26 tasks, on the average, and had one of the less complex jobs in the career ladder (JDI=5.3). Some of the tasks these personnel spent much of their time on included:

perform non-powered periodic inspections
perform non-powered AGE visual or service inspections
paint, stencil, or mark AGE
reflectorize AGE
perform liquid oxygen or nitrogen equipment
 periodic inspections
perform general shop housekeeping, such as cleaning
 drip pans and sweeping floors
pack wheel bearings

Sixty-nine percent of non-powered AGE mechanics were 5-skill level personnel, while the rest held the 3-skill level DAFSC. Together, members of the cluster averaged three years of service in the career ladder.

Within the cluster were two job types: (a) wheel and brake mechanics, and (b) periodic inspection personnel. As these names suggest, members of the first group specialized in wheel and brake maintenance, while members of the second spent most of their time performing periodic, visual, and service inspections.

A. Wheel and Brake Mechanics (GRP546, N=38). Nearly 80 percent of these personnel were 5-skill level, while the rest held the 3-skill level DAFSC. Members of this job type averaged three years of service in the AFS. Tsks characteristic of this group included:

adjust brake systems
perform broke system operational checks
remove or install AGE broke assembly components
isolate brake system malfunctions

B. Periodic Inspection Personnel (GRP640, N=11). Members of this job type were somewhat more senior, averaging four years of service in the career ladder. Of the eleven members, six held the 5-skill level DAFSC, one held the 7-skill level, and the remainder possessed the 3-skill level. Typical tasks for this job group are:

perform shop support equipment visual or service
 inspections
remove or install hinges, stays, or fasteners
inspect vehicles for safety of operations
perform shop support equipment periodic inspections

III. AGE SERVICING AND DISPATCH PERSONNEL (GRP079, N=311). Like the non-powered AGE mechanics, these personnel also performed one of the less complex jobs in the career ladder (JDI=7.2), averaging only 41 tasks performed. They spent most of their time servicing AGE and dispatching. Tasks characteristic of the cluster included:

fuel AGE
operate two-way vehicle radios
pick up or deliver AGE or AGE parts
clean vehicles
perform heater visual or service inspections
perform generator visual or service inspectios
perform gas turbine compressor visual or service inspections

Although these personnel performed a relatively small number of tasks, they performed them on a wide variety of AGE, including:

A/M32A-60 Generators
A/M32A-60A Generators
MD-3 Generators
MD-3M Generators
NF-2 Generators
AM/32C-10 Air Conditioners
MA-1A Air Conditioners
MJ-1 Bomb Lifts
MJ-1A Standard Manufacturing Bomb Lifts
MC-1A Davey (diesel) Air Compressors
MC-1A Davey (gasoline) Air Compressors
MC-2A Air Compressors
H-1 Heaters
1H-1 Davey Heaters

These personnel were also fairly junior, averaging three years in the career field, with most holding the 5-skill level DAFSC, while 20 percent possessed the 3-skill level.

Within the cluster were three job types: (a) AGE inspection and dispatch personnel, (b) AGE dispatch and service personnel, and (c) AGE inspection personnel. The first of these three groups generally fit the description of the cluster, as a whole, while the remaining two tended to perform more limited jobs.

A. AGE Inspection and Dispatch Personnel (GRP561, N=108). Although the job these personnel performed was basically the same as the cluster, as a whole, they were slightly more junior, averaging only two years in the specialty. Nearly 80 percent were 5-skill level personnel, while the remainder held the 3-skill level.

B. AGE Dispatch and Service Personnel (GRP413, N=91). Members of this job type performed a much more limited job, spending much of their time on just five tasks:

fuel AGE
operate two-way vehicles
pick up or deliver AGE or AGE parts
inspect vehicles for safety of operation
perform generator visual or service inspections

C. AGE Inspection Personnel (GRP345, N=11). Although this group was more senior, averaging over three years in the specialty, they actually had a larger percentage of 3-skill level personnel than the other two groups and performed the most limited job in the cluster. They spent nearly all their time performing visual and service inspections on compressors, generators, bomb lifts, air conditioners, hydraulic test stands and other miscellaneous AGE.

IV. TACS POWER GENERATION PERSONNEL (GRP147, N=95). These personnel provided mobile AGE support for tactical air control systems (TACS). Many of the tasks they performed concerned power generation, including:

install power cables
perform TACS generator operational checks
maintain power cables
perform mobile TACS generator visual or service inspections
set up or tear down powered systems
build power cables

In addition, a sizeable part of their job included setting up mobile installations as shown in the following tasks:

emplace ground rods and fence posts
drape camouflage
set up perimeter ropes and signs
fold camouflage
perform secure site defense duties
prepare mobility vans for deployment
prepare mobility shelters for deployment
maintain mobility shelters

Further, TACS personnel performed a good deal of sophisticated maintenance on a wide variety of equipment. Some of the maintenance tasks they performed included:

remove or install printed circuit boards
load test generator sets
solder electrical system wiring
clean printed circuit board tracks
isolate malfunctions within solid-state circuitry
change generators or alternators
perform circuit card signal input or output readings
measure voltages of AGE solid-state circuitry
remove or install gauges
adjust gas turbine engine governors
splice electrical system wiring
isolate malfunctions within integrated circuitry
maintain power converter systems
remove or install solid-state and integrated circuitry

Due to the number and wide variety of tasks these personnel performed, their job was among the most difficult in the career ladder (JDI=16.1).

TACS personnel worked on little of the AGE characteristic of other clusters in the career ladder. Instead, they maintained equipment especially designed for mobility use. This equipment included:

A/E24U-8 Generators
EMU-12/E (GT 400HZ) Generators
EMU-30/E (GT 400HZ) Generators
MB-18 Generators
MEP016A Generators
1H-1 Davey Heaters
MC-2A Air Compressors

Personnel in this cluster generally were more senior than most others in the career ladder, averaging six and one-half years of service in the AFS. Twenty-eight percent held the 7-skill level DAFSC, while most of the remainder possessed the 5-skill level.

Within the cluster were three job types: (a) TACS power generation mobility personnel, (b) TACS power generation electricians, and (c) TACS power generation NCOICs. These three job types differed from each other in several respects. Mobility personnel were the most junior and performed the most limited job, both in terms of number of tasks and overall difficulty. NCOICs, as might be expected, were the most senior and performed the most demanding job. Electricians, who formed the bulk of the cluster, generally fit the description of the cluster as a whole.

A. TACS Power Generation Mobility Personnel (GRP329, N=10). These personnel performed about half as many tasks as the cluster overall, spending most of their time preparing AGE to be transported and setting up the mobility site. As a result, their job was considerably less difficult than

the others in this cluster, although their difficulty index was about average for the career ladder in general (JDI=11.8). All ten members of this job type possessed the 5-skill level DAFSC and averaged four years of service in the AFS.

B. TACS Power Generation Electricians (GRP501, N=51). This group's job description closely paralleled that of the cluster, as a whole, but gave somewhat greater emphasis to the maintenance of electrical and electronic circuits. These electricians averaged four and one-half years in the specialty and were predominantly 5-skill level personnel. Twenty-seven percent were evenly divided between the 3- and 7-skill level DAFSCs.

C. TACS Power Generation NCOICs (GRP474, N=23). TACS NCOICs had the most demanding job in the cluster (JDI=19.5). Of the 185 tasks they performed, about 60 percent were actual maintenance tasks typical of this cluster. The remaining 40 percent were supervisory and administrative in nature. These NCOICs averaged eleven and one-half years of service in the AFS. Seventy percent possessed the 7-skill level DAFSC, while the rest held the 5-skill level.

V. SUPPLY PERSONNEL (GRP077, N=139). Members of this cluster performed no AGE maintenance whatever, but spent all their time tracking and maintaining tools, parts, and equipment stocks for their AGE branch. Tasks characteristic of the cluster included:

maintain bench stocks
establish bench stock levels
maintain special tools or shop equipment
maintain awaiting maintenance or parts files
maintain status boards, graphs, or charts
maintain hold bin parts
inventory equipment, tools, or supplies
issue or turn-in special tools or shop equipment
maintain AF Forms 2413 (Supply Control Log)
maintain AFTO Forms 244 and 245 (System/Equipment Status Record and continuation Sheet)
make entries on AF Forms 2005 (Issue/Turn in Request)
make entries on AFTO Forms 350 (Reparable Item Processing Tag)
make entries on AF Forms 1297 (Temporary Issue Receipt)

Personnel in the cluster averaged over six and one-half years in the specialty. Most possessed the 5-skill level DAFSC, but 30 percent held the 7-skill level.

Within the cluster were four job types: (a) supply maintenance personnel, and (b) bench stock and tool personnel, and (c) supply control personnel, and (d) supply NCOICs. Of these four groups, supply control personnel were the most junior and performed the most limited job, while the NCOICs were the most senior and performed the broadest job. While the NCOICs' job was about average in difficulty (JDI=11.9), the remaining three jobs were far below average in complexity (their JDIs were 6.7, 5.6, and 4.8, respectively).

A. Supply Maintenance Personnel (GRP433, N=49). This group's job description generally was similar to that of the cluster as a whole. Members of the job type averaged five years in the career ladder and were predominantly 5-skill level personnel although 12 percent held the 7-skill level.

B. Bench Stock and Tool Personnel (GRP290, N=23). Personnel in this group spent all of their time on just 16 tasks primarily limited to maintaining bench stock supplies and special tool kits. They averaged four years of service in the career ladder. Most were 5-skill level personnel.

C. Supply Control Personnel (GRP326, N=10). These personnel performed an average of only 11 tasks, all of which involved maintaining status boards or filling out various forms. Members of this group indicated they held positions as supply or material controllers. Forms these personnel worked with included all those mentioned in the overall cluster job description. Group members averaged three and one-half years in the specialty. Nine of the ten held the 5-skill level DAFSC, while the remaining one possessed the 3-skill level.

D. Supply NCOICs (GRP541, N=49). Of the 64 tasks in this group's job description, about half were supervisory in nature, while the rest were typical of the cluster in general. These NCOICs averaged 11 years of service in the specialty and were predominantly 7-skill level personnel. Thirty-percent, however, held the 5-skill level DAFSC.

IV. AGE NCOICs (GRP075, N=423). This cluster constituted the second largest job group in the career ladder. Members of the cluster were all working as supervisors. On the average, they supervised eight subordinates each, although some supervised three or less, while others said they supervised more than 30. Of the 60 most time-consuming tasks performed by cluster members, virtually all were supervisory and administrative in nature. Very few were concerned with any hands-on maintenance of equipment. Tasks characteristic of the cluster included:

supervise AGE mechanics
counsel personnel on personal or military problems
determine work priorities
prepare APRs
plan work assignments
interpret policies, directives, or procedures for subordinates
demonstrate how to locate technical information

Overall, the job of cluster members was somewhat more difficult than average (JDI=15.3) reflecting the number and complexity of tasks performed.

Members of the supervisor cluster averaged 11 years of experience in the career ladder and consisted mostly of 7-skill level personnel, although 25 percent held the 5-skill level DAFSC. In terms of primary AFSC, six percent possessed the 9-skill level. The rest were 7-skill level members.

Eight job types differed from each other, either in terms of the supervisory level occupied by the members, the type of activity being supervised, or the breadth of maintenance supervised.

A. Generator Minor Maintenance Supervisors (GRP536, N=153). These supervisors formed the largest job type in the cluster. They supervised an average of 11 personnel performing minor maintenance on generators, but performed no maintenance themselves. Nearly all of these supervisors held the 7-skill level DAFSC and 15 percent also possessed the 9-skill level primary AFSC. They averaged 14 years of service in the career ladder, making these among the most experienced personnel in the cluster. While their job was somewhat more difficult than average (JDI=15.4), some other personnel in the cluster had considerably more demanding jobs.

B. Minor Maintenance Supervisors (GRP448, N=69). While the previous group supervised generator minor maintenance, members of this job type supervised an average of six people performing minor maintenance on a variety of AGE. Also in contrast to the previous group, these supervisors spent much of their time maintaining equipment Of their most time-consuming tasks, 64 percent involved actual minor maintenance of equipment. Nevertheless, their job was no more difficult (JDI=15.5).

These supervisors averaged nine years in the specialty and were evenly split between 5- and 7-skill level personnel.

C. Generator and Turbine Maintenance Supervisors (GRP634, N=30). Members of this group had the most demanding job in the cluster (JDI=21.4) and were also the most senior; they averaged over 14 years of service in the AFS and were almost entirely made up of 7-skill level personnel. In addition, they supervised the most people, averaging 12 subordinates in their span of control. As their name suggests, these personnel primarily supervised generator and turbine maintenance activities but performed only limited maintenance themselves.

D. General Maintenance Supervisors (GRP671, N=15). Like the previous group, general maintenance supervisors also had a very demanding job (JDI=20.7), but they were much more junior and performed a good deal more maintenance themselves. Members of this group averaged seven and one-half years in the specialty and were evenly divided between 5-and 7-skill level personnel. On the average, they supervised seven personnel performing maintenance on a variety of equipment including compressors, generators, heaters, air conditioners, hydraulic systems, and turbine engines. About half of their most time-consuming tasks involved actual maintenance of equipment, indicating these personnel were technicians as well as supervisors.

E. Crew Chiefs (GRP701, N=10). These crew chiefs spent nearly all their time supervising an average of seven subordinates who primarily maintained generators, but also worked with compressors and non-powered AGE to some extent. They were fairly senior, averaging nine and one-half years in the specialty and consisting mostly of 7-skill level personnel. Their job was about average in difficulty.

F. Non-Powered AGE Supervisors (GRP363, N=12). As their name suggests, these personnel supervised an average of four people maintaining non-powered AGE exclusively. They were the most junior group in the cluster, averaging only seven years in the career ladder and being evenly split between 5- and 7-skill level personnel. About half of their most time-consuming tasks were concerned with hands-on maintenance. Their job was of average difficulty (JDI=13.5).

G. Dispatch Supervisors (GRP462, N=11). Dispatch supervisors had the least difficult job in the cluster (JDI=11.1). They averaged eight years in the AFS, were predominently 7-skill level personnel, and supervised an average of eight people. These supervisors spent most of their time dispatching drivers to pick up or deliver parts and equipment, as well as coordinating repair of such equipment with the maintenance shop.

H. Tech Order Library Supervisors (GRP205, N=10). These supervisors spent much of their time maintaining tech order files, as well as researching tech orders. Little time was spent on actual maintenance. Members of this group averaged nine and one-half years in the career ladder, were predominantly 7-skill level personnel, and supervised an average of four people. The difficulty of their job was about average (JDI=13.2) in spite of limited scope of their activities.

VII. QUALITY CONTROL INSPECTORS (GRP105, N=51). Quality Control Inspectors performed essentially the same job as quality controllers in any AFS: they inspected maintenance activities to ensure that standards of performance were being met. Tasks characteristic of the cluster included:

inspect completed maintenance performance
perform AGE and non-powered AGE quality verification inspections
inspect completed supervisor performance
perform quality control task evaluations
make entries on AF Forms 2419 (Routing and Review of Quality Control Reports)
perform activity inspections
perform quality control supervisor evaluations
perform spot checks on activities or performance
make entries on AF Forms 2420 (Quality Control Inspection Summary)
perform non-AGE related quality control functions

Overall, members of this cluster were among the most senior in the career ladder, averaging over 11 years of service in the specialty and consisting mostly of 7-skill level personnel. Their job difficulty was average (JDI=13.5).

Within the cluster were two distinguishable job types: (a) program inspectors and (b) maintenance inspectors. Of the two, program inspectors were slightly more junior, having served in the AFS ten years compared to 13

for the maintenance inspectors. Nevertheless, program inspectors performed a broader job; their job description contained 50 tasks, about three times as many as the maintenance inspectors' job description.

A. Program Inspectors (GRP848, N=21). These personnel spent most of their time inspecting various kinds of programs, especially quality control and safety programs. In addition, they also investigated accidents and inspected mobility equipment.

B. Maintenance Inspectors (GRP386, N=15). Members of this group spent all their time performing a handful of inspection tasks, including maintenance inspections, foreign object damage prevention inspections, and inspections of supervisory activities.

VIII. INSTRUCTORS (GRP265, N=25). All but one of the members of this independent job type were technical school instructors at Chanute AFB. The lone exception was a field training detachment instructor assigned to Barksdale AFB. These instructors spent all of their time performing just 18 tasks and had a job somewhat less difficult than average (JDI=10.2). Tasks they spent most of their time on included:

```
administer tests
conduct resident course classroom training
counsel trainees on training progress
score test
evaluate progress of resident course students
develop lesson plans
```

Most of the members of this group possessed the 5-skill level DAFSC. The group, as a whole, averaged five and one-half years experience in the specialty.

Comparison of Specialty Jobs

While the previous section described each job group separately, this section compares the groups to highlight important differences and similarities among them. One of the more striking features of the data presented is that the maintenance related clusters--AGE Mechanics, Non-Powered AGE Mechanics, AGE Servicing and Dispatch Personnel, and TACS Power Generation Personnel--account for over 60 percent of the entire sample and the AGE Mechanics cluster alone accounted for over 40 percent of the sample. This finding suggests the career ladder is fairly homogeneous, although there is some diversity reflected in the nine job types within the AGE mechanics cluster.

Table 5 displays data for several items for each of the major job groups including the number of tasks performed, average task difficulty per unit time spent (ATDPUTS), and the JDI. As the name suggests, the ATDPUTS data reflect the average difficulty of tasks each group spends most of its time on. The JDI, in turn, reflects the ATDPUTS as well as the number of tasks performed. Three clusters, AGE Mechanics, TACS Power Generation Personnel, and NCOICs, had high JDIs, indicating they had the most demanding jobs in the career ladder. Apparently, non-powered AGE mechanics had the least difficult job, followed closely by AGE servicing and dispatch personnel and supply personnel.

Several other interesting trends are apparent in Table 5. For example, few females were members of the AGE NCOIC, quality controller, or TACS power generation groups while both the supply and instructor groups contained relatively large percentages of females. Most job groups tended to be made up predominantly of 5-skill level personnel who were in either their first or second enlistment, and between two-thirds and three-fourths of most groups were assigned to bases in the Continental United States (CONUS): exceptions were TACS personnel who were about evenly split between the CONUS and overseas, and instructors who were, not surprisingly, totally assigned to the CONUS.

Another worthwhile comparison between groups concerned their job satisfaction. Table 6 shows how each group felt about their job in terms of how interesting they found their work, how well their talents and training were used, how satisfying they found the sense of accomplishment their job provided, and whether they planned to reenlist. Generally, most groups found their jobs fairly satisfying. Instructors seemed to be the happiest overall, as well as in terms of each index considered alone. Supply personnel appeared somewhat dissatisfied with how their talents and training were being used, but their responses did not indicate a major morale problem. By contrast, non-powered AGE mechanics were markedly unhappy with their jobs as were, to a lesser extent, AGE servicing and dispatch personnel. More members of these two groups found their work dull, felt their talents and training less well used, and were less likely to want to reenlist than virtually anyone else in the career ladder.

In summary, the picture presented here is of a demanding, equipment-oriented specialty where most mechanics maintained a wide range of AGE. Overall, career ladder members appeared happy about their work, although non-powered AGE mechanics and AGE servicing and dispatch personnel were notable exceptions.

TABLE 5

COMPARISON OF BACKGROUND DATA FOR CLUSTERS AND INDEPENDENT JOB TYPES

	AGE MECHANICS (GRP218)	NON-POWERED AGE MECHANICS (GRP098)	AGE SERVICING & DISPATCH PERSONNEL (GRP079)	TACS POWER GENERATION PERSONNEL (GRP147)	SUPPLY PERSONNEL (GRP077)	AGE NCOICs (GRP075)	QUALITY CONTROL INSPECTORS (GRP105)	INSTRUCTORS (GRP265)
NUMBER IN GROUP	1,132	85	311	95	139	423	52	25
PERCENT OF SAMPLE	43%	3%	12%	4%	5%	16%	2%	1%
PERCENT WHO ARE FEMALE	11%	17%	17%	5%	26%	3%	4%	32%
SKILL LEVEL								
42335	16%	27%	21%	7%	7%	0%	0%	0%
42355	72%	69%	74%	65%	62%	25%	16%	84%
52375	12%	4%	5%	28%	31%	75%	84%	16%
AVERAGE GRADE	E-4	E-3	E-3	E-3	E-4	E-6	E-6	E-4
AVG TAFMS (IN MONTHS)	47	41	40	81	84	148	151	70
PERCENT IN FIRST ENLISTMENT	69%	70%	78%	37%	39%	4%	0%	40%
PERCENT CONUS	71%	75%	70%	47%	63%	70%	76%	100%
PERCENT OVERSEAS	29%	25%	30%	53%	37%	30%	24%	0%
AVG NO. TASKS PERFORMED	155	26	41	134	35	106	48	18
JOB DIFFICULTY								
ATDPUTS	4.6	3.9	4.1	4.7	4.4	4.9	5.3	5.1
JDI	16.0	5.3	7.2	16.1	8.0	15.3	13.5	10.2

TABLE 6

JOB SATISFACTION OF CLUSTERS AND INDEPENDENT JOB TYPES*

	AGE MECHANICS (GRP218, N=1,132)	NON-POWERED AGE MECHANICS (GRP098, N=85)	AGE SERVICING & DISPATCH PERSONNEL (GRP079, N=311)	TACS POWER GENERATION PERSONNEL (GRP147, N=95)	SUPPLY PERSONNEL (GRP077, N=139)	AGE NCOICs (GRP075, N=423)	QUALITY CONTROL INSPECTORS (GRP105, N=52)	INSTRUCTORS (GRP265, N=25)
FINDS JOB								
DULL	9	24	24	8	11	6	2	8
SO-SO	18	34	24	17	12	16	10	8
INTERESTING	71	41	50	73	72	76	86	84
FEELS TALENTS USED								
LITTLE OR NOT AT ALL	17	41	39	18	27	12	2	12
FAIRLY WELL OR BETTER	83	59	61	82	73	87	98	88
FEELS TRAINING USED								
LITTLE OR NOT AT ALL	14	48	34	30	46	11	10	8
FAIRLY WELL OR BETTER	86	52	65	70	54	88	90	92
SATISFIED WITH SENSE OF ACCOMPLISHMENT								
NO	15	24	28	15	19	16	6	8
AMBIVALENT	12	27	20	8	12	12	6	0
YES	73	49	52	77	68	72	88	92
PLAN TO REENLIST								
WILL RETIRE	1	1	0	4	2	13	12	4
NO	38	41	40	33	27	9	12	20
YES	61	58	59	62	71	77	77	76

* COLUMN TOTALS MAY NOT ADD UP TO 100 PERCENT IF PERSONNEL LEFT SOME ITEMS BLANK

ANALYSIS OF DAFSC GROUPS

An important use of the preceding analysis of specialty jobs is to evaluate whether the AFR 39-1 specialty descriptions adequately cover tasks performed by members of the career ladder. But, since the AFR 39-1 descriptions were written by skill level (DAFSC), a more direct analysis of job descriptions by skill level would be helpful in applying the findings of the specialty jobs analysis. For this reason, this section undertakes an analysis of Duty Air Force Specialty Code (DAFSC) groups.

Table 7 displays the number of 3-, 5-, and 7-skill level personnel who grouped in each of the functional groups. Note that the largest numbers of 3- and 5-skill level personnel were members of the AGE mechanics' cluster, distantly followed by the AGE servicing and dispatch cluster. Of course, the largest number of 7-skill level personnel were members of the NCOIC cluster. Interestingly, two 3-skill level personnel were also members of the NCOIC group. Further research revealed that one of these two people possessed the 7-skill level primary AFSC, but was assigned against a 3-skill level authorization. The other person possessed the 3-skill level primary AFSC but, according to her supervisor, had extraordinary ability and potential; consequently, she was working as a swing-shift supervisor at the time of this survey.

Since 5-skill level members were by far the largest skill level group in the sample, and since 1,162 of the total 1,589 (73 percent) grouped with one of the four maintenance-related job groups, one would expect the 5-skill level job description to heavily emphasize maintenance tasks. In fact, of the 200 most time-consuming tasks these personnel performed, 157 were actual, hands-on maintenance tasks covering regular and minor maintenance of air compressors, generators, heaters, air conditioners, blowers, bomb lifts, and hydraulic test stands. The three-skill level job description was not much different and, for this reason, the two have been combined for comparison with the 7-skill level description.

Seven-skill level personnel, as might be expected, spent most of their time on supervisory and administrative tasks. Of their 200 most time-consuming tasks, 125 were supervisory or administrative in nature. The remaining 75 tasks included nine visual or service inspection tasks and 66 maintenance tasks, such as replacing spark plugs or fueling AGE.

Table 8 shows which tasks best distinguished 7-skill level versus 3- and 5-skill level personnel. Note that 3-and 5-skill level members were more likely to perform manual maintenance tasks while 7-skill level personnel, as anticipated, were more likely to perform supervisory tasks. These data seem to suggest a more distinct difference in jobs between 7-skill level and 3- and 5-skill level members than is sometimes found in other specialties. Thus, the majority of 7-skill level personnel in this career ladder generally do not appear to perform much equipment maintenance; rather, they seem to spend most of their time supervising and managing the activities of 3- and 5-skill level subordinates.

TABLE 7

NUMERICAL DISTRIBUTION OF SKILL LEVEL PERSONNEL
ACROSS SPECIALTY JOBS

JOB GROUP	3-SKILL LEVEL (N=339)	5-SKILL LEVEL (N=1,589)	7-SKILL LEVEL (N=685)
AGE MECHANICS	176	816	132
NON-POWERED AGE MECHANICS	21	56	3
AGE SERVICING AND DISPATCH PERSONNEL	65	228	16
TACS POWER GENERATION PERSONNEL	7	62	26
SUPPLY PERSONNEL	9	85	43
AGE NCOICS	2*	102	313
QUALITY CONTROLLERS	0	8	41
INSTRUCTORS	0	21	4
UNGROUPED	59	211	107

* ONE OF THESE TWO PERSONNEL POSSESSED THE 7-SKILL LEVEL PRIMARY AFSC WHILE ASSIGNED TO A 3-SKILL LEVEL BILLET. THE OTHER PERSON POSSESSED THE 3-SKILL LEVEL DAFSC AS WELL, BUT WAS AN OUTSTANDING PERFORMER WHO WAS REWARDED WITH A SHIFT SUPERVISOR POSITION.

TABLE 8

TASKS THAT BEST DISTINGUISH 3- AND 5-SKILL LEVEL
VERSUS 7-SKILL LEVEL PERSONNEL
(PERCENT PERFORMING)

TASKS		3- AND 5-SKILL LEVEL PERSONNEL	7-SKILL LEVEL PERSONNEL	DIFFERENCE
N489	REMOVE OR INSTALL BATTERIES	69	35	+34
N488	REMOVE OR INSTALL AGE TIRE, TUBE, OR WHEEL ASSEMBLIES	64	30	+34
N478	PAINT, STENCIL, OR MARK AGE	62	28	+34
N477	PACK WHEEL BEARINGS	54	20	+34
I311	REMOVE OR INSTALL SPARK PLUGS	71	37	+34
I257	CLEAN AND ADJUST SPARK PLUGS	71	38	+33
N473	ADJUST BRAKE SYSTEMS	64	32	+32
N494	REMOVE OR INSTALL HINGES, STAYS, OR FASTENERS	59	27	+32
N484	REFLECTORIZE AGE	54	23	+32
Q568	PERFORM GENERAL SHOP HOUSEKEEPING, SUCH AS CLEANING DRIP PANS AND SWEEPING FLOORS	60	32	+28
I283	REMOVE OR INSTALL ENGINE EXHAUST MANIFOLDS, SEALS, GASKETS, OR COMMON HARDWARE	55	27	+28
I228	REMOVE OR INSTALL GAUGES	58	30	+28
C66	PREPARE APRs	16	76	-60
B25	COUNSEL PERSONNEL ON PERSONAL OR MILITARY PROBLEMS	20	78	-58
E135	MAKE ENTRIES ON AF FORMS 623 AND AF FORMS 623A (ON-THE-JOB TRAINING RECORD AND CONTINUATION SHEET)	20	70	-50
B36	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	14	62	-48
A4	DETERMINE WORK PRIORITIES	23	69	-46
B39	SUPERVISE AEROSPACE GROUND EQUIPMENT MECHANICS (AFSC 42355)	22	68	-46
C49	EVALUATE COMPLIANCE WITH PERFORMANCE STANDARDS	9	55	-46
A17	PLAN WORK ASSIGNMENTS	14	59	-45
C5[illegible]	EVALUATE INDIVIDUALS FOR PROMOTION, DEMOTION, RECLASSIFICATION, OR SPECIAL AWARDS	6	51	-45
E136	MAKE ENTRIES ON AF FORMS 797 (JOB PROFICIENCY GUIDE CONTINUATION SHEET)	14	49	-45
A19	SCHEDULE LEAVES OR PASSES	5	50	-45
A9	ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	11	55	-44
B45	WRITE CORRESPONDENCE	7	51	-44

COMPARISON OF SURVEY DATA TO AFR 39-1 SPECIALTY DESCRIPTIONS

Using the preceding DAFSC analysis as a basis for comparison, the AFR 39-1 specialty descriptions (dated 1 January 1982) were evaluated for their coverage of career ladder tasks and the distinction made between skill levels. Overall, the descriptions were accurate, thorough, and reflected the separation of responsibility between 7-skill level versus 3- and 5-skill level personnel.

TAFMS ANALYSIS

In addition to analysis of skill level jobs, separate analysis of Total Active Federal Military Service (TAFMS) groups' job descriptions often helps to show how jobs and peoples' feelings about their jobs change as they gain more experience. Since the DAFSC section has already described the jobs of personnel at various points in their career, and since first-termer jobs will be described in detail in the training analysis section, this discussion of TAFMS groups will be limited to a comparison of first-termers, second-termers and career personnel.

Table 9 shows which tasks best distinguished between first- and second-term personnel. Note that only ten tasks were performed by significantly more first-termers than second-termers, and these tasks were among the more manual, less technical maintenance tasks. Also note that sizeable percentages of second-termers performed each of those ten tasks. Thus, second-termers appear to be performing most of the same tasks as first-termers. The table also shows that second-termers perform a number of additional, supervisory tasks that most first-termers do not perform. Apparently, first-termers are working almost exclusively as mechanics, while second-termers are mechanics who often also work as supervisors.

Table 10 displays those tasks which best discriminate between second-term and career personnel. Because of the large number of tasks that distinguished the two groups, only those tasks that differed between groups by at least 25 percent performing are shown in the table. Note that while Table 9 showed that second-termers performed basic, first-line supervisory tasks, Table 10 shows that second-termers are less likely than career personnel to perform higher level supervisory tasks. For example, second-termers prepared APRs but generally did not indorse them, as career personnel did. Additionally, second-termers conducted OJT, but career personnel assigned OJT trainers. Again, second-termers interpreted procedures for subordinates, but career personnel developed procedures.

In addition to their differing levels of supervision, second-termers were more likely than career personnel to perform less technical, more manual maintenance tasks. This finding is consistent with the finding of the DAFSC analysis that 5-skill level personnel performed many more maintenance tasks than 7-skill level personnel and is explained by the fact that 80 percent of second-termers possessed the 5-skill level DAFSC while 80 percent of the career personnel possessed the 7-skill level. Note that Table 10 shows between 20 and 40 percent of career personnel performing maintenance tasks more typical of second-termers. This finding does not contradict the conclusion of the DAFSC analysis that 7-skill level personnel generally perform little actual maintenance since nearly 20 percent of career personnel possessed the 5-skill level DAFSC.

Determining how jobs change as individuals become increasingly experienced provides a helpful background for examining the job satisfaction of enlistment groups. In examining job satisfaction by enlistment group, however, caution must be used in attributing any changes to length of service for three reasons: first, the same people are not represented in each

group; second, not everyone in one enlistment group progresses into the next one; and third, the work experiences of present first- or second-enlistment personnel may differ from those of previous first- or second-enlistment personnel. Nevertheless, analysis of job satisfaction by enlistment group may highlight morale problems that otherwise might have been overlooked.

Job satisfaction was of particular interest in this study since some career ladder members had complained that the large number of types of equipment maintained in the specialty was hurting job satisfaction. To help address this concern, Table 11 presents job satisfaction data for first-term, second-term, and career personnel. In addition, the table also presents data for other, related specialties that essentially provides a measure of the average job satisfaction for personnel working in maintenance-oriented jobs. Thus, the table allows managers to tell whether AGE job satisfaction is better or worse than average. As Table 11 shows, AGE personnel found their jobs as interesting and generally felt their training as well-used as personnel in other specialties. At the same time, they seemed to feel their talents better used, appeared more satisfied with their sense of accomplishment, and were more likely to reenlist than the comparison group. Further, no enlistment group seemed to have any significant advantage over another, except that career personnel seemed happier with the use of their training than either first- or second-termers. Overall, the reenlistment rate of 423X5 personnel appears somewhat better than average, in spite of concerns that the amount of equipment maintained in the AFS may have hurt job satisfaction.

TABLE 9

TASKS THAT BEST DISTINGUISH FIRST-TERM VERSUS SECOND-TERM PERSONNEL
(PERCENT PERFORMING)

TASKS		FIRST-TERMERS (1-48 MONTHS)	SECOND-TERMERS (49-96 MONTHS)	DIFFERENCE
P548	FUEL AGE	55	38	+17
N478	PAINT, STENCIL, OR MARK AGE	67	52	+15
I311	REMOVE OR INSTALL SPARK PLUGS	75	60	+15
N488	REMOVE OR INSTALL AGE TIRE, TUBE, OR WHEEL ASSEMBLIES	68	54	+14
N477	PACK WHEEL BEARINGS	58	44	+14
N489	REMOVE OR INSTALL BATTERIES	73	60	+13
N494	REMOVE OR INSTALL HINGES, STAYS, OR FASTENERS	63	50	+13
N484	REFLECTORIZE AGE	58	45	+13
F152	PERFORM AIRCRAFT SUPPORT AIR COMPRESSOR OR VISUAL SERVICE INSPECTIONS	62	50	+12
B25	COUNSEL PERSONNEL ON PERSONAL OR MILITARY PROBLEMS	18	52	-44
B39	SUPERVISE AEROSPACE GROUND EQUIPMENT MECHANICS (AFSC 42355)	10	53	-43
C66	PREPARE APRs	5	46	-41
E135	MAKE ENTRIES ON AF FORMS 623 AND AF FORMS 623A (ON-THE-JOB TRAINING RECORD AND CONTINUATION SHEET)	10	48	-38
A4	DETERMINE WORK PRIORITIES	13	48	-35
B41	SUPERVISE APPRENTICE AEROSPACE GROUND EQUIPMENT MECHANICS (AFSC 42335)	17	47	-30
D80	DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION	17	47	-30
D79	COUNSEL TRAINEES ON TRAINING PROGRESS	6	36	-30
D75	CONDUCT OJT	12	41	-29
B37	INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	26	55	-29
E136	MAKE ENTRIES ON AF FORMS 797 (JOB PROFICIENCY GUIDE CONTINUATION SHEET)	5	34	-29
A17	PLAN WORK ASSIGNMENTS	7	33	-26
B36	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	7	33	-26
A9	ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	5	30	-25

TABLE 10

TASKS THAT BEST DISTINGUISH SECOND-TERM VERSUS CAREER PERSONNEL
(PERCENT PERFORMING)

TASKS		SECOND-TERMERS (49-96 MONTHS)	CAREER PERSONNEL (97+ MONTHS)	DIFFERENCE
N489	REMOVE OR INSTALL BATTERIES	60	36	+24
N473	ADJUST BRAKE SYSTEMS	56	32	+24
N477	PACK WHEEL BEARINGS	44	20	+24
I257	CLEAN AND ADJUST SPARK PLUGS	62	39	+23
N478	PAINT, STENCIL, OR MARK AGE	52	29	+23
H197	CLEAN CONTACTOR POINTS	54	31	+23
N488	REMOVE OR INSTALL AGE TIRE, TUBE, OR WHEEL ASSEMBLIES	54	31	+23
I311	REMOVE OR INSTALL SPARK PLUGS	60	38	+22
N494	REMOVE OR INSTALL HINGES, STAYS, OR FASTENERS	50	28	+22
A19	SCHEDULE LEAVES OR PASSES	10	49	-39
B45	WRITE CORRESPONDENCE	13	49	-36
B40	SUPERVISE AEROSPACE GROUND EQUIPMENT TECHNICIANS (AFSC 42375)	7	41	-34
C62	INDORSE APRs	14	47	-33
A2	ASSIGN SPONSORS FOR NEWLY ASSIGNED PERSONNEL	8	40	-32
A20	SCHEDULE PERSONNEL FOR SCHOOLS, TDY, ASSIGNMENTS, OR NON-TECHNICAL TRAINING	9	40	-31
E125	MAKE ENTRIES ON AF FORMS 2419 (ROUTING AND REVIEW OF QUALITY CONTROL REPORTS)	10	41	-31
C50	EVALUATE INDIVIDUALS FOR PROMOTIONS, DEMOTION, RECLASSIFICATION, OR SPECIAL AWARDS	19	48	-29
D72	ASSIGN ON-THE-JOB TRAINING (OJT) TRAINERS	15	43	-28
C66	PREPARE APRs	46	73	-27
B36	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	33	60	-27
C49	EVALUATE COMPLIANCE WITH PERFORMANCE STANDARDS	25	52	-27
C51	EVALUATE INSPECTION REPORTS OR PROCEDURES	15	42	-27
A6	DEVELOP WORK METHODS OR PROCEDURES	26	53	-27

TABLE 11

JOB SATISFACTION OF 423X5 PERSONNEL COMPARED TO PERSONNEL IN SIMILAR CAREER LADDERS*
(PERCENT RESPONDING**)

	FIRST ENLISTMENT		SECOND ENLISTMENT		CAREER	
	423X5	COMP DATA	423X5	COMP DATA	423X5	COMP DATA
FINDS JOB:						
DULL	14	13	11	12	7	10
SO-SO	22	16	17	18	14	15
INTERESTING	62	69	69	67	77	73
FEELS TALENTS USED:						
LITTLE OR NOT AT ALL	25	23	19	21	13	18
FAIRLY WELL OR BETTER	74	77	81	71	86	82
FEELS TRAINING USED:						
LITTLE OR NOT AT ALL	24	21	25	23	14	24
FAIRLY WELL OR BETTER	76	79	75	77	85	75
SATISFIED WITH SENSE OF ACCOMPLISHMENT:						
NO	19	20	17	23	16	23
AMBIVALENT	15	14	13	12	10	9
YES	66	65	70	64	74	67
PLAN TO REENLIST:						
WILL RETIRE	0	0	0	0	14	18
NO	47	59	22	44	7	14
YES	52	40	76	54	78	66

* 1982 DATA FROM AFSs 304X1, 306X0, 306X1, 306X2, AND 445XOF/G
** COLUMN TOTALS MAY NOT EQUAL 100 PERCENT IF ITEMS WERE LEFT BLANK

TRAINING ANALYSIS

Technical training personnel may find the preceding analysis of enlistment group jobs too general to help evaluate current training programs. Therefore, to provide a more detailed basis for guiding decisions about training, this section thoroughly describes first-termer jobs, addresses specific issues raised by the training community, and evaluates the success of current training documents in meeting career ladder needs.

First-Enlistment Job Description

First-termers generally performed broad jobs of moderate difficulty (JDI=12.0) averaging 100 tasks. These tasks covered both powered and nonpowered AGE, including generators, air compressors, heaters, bomb lifts, and hydraulic test stands. Examples of the more time-consuming tasks were:

fuel AGE
remove or install batteries
remove or install spark plugs
pick up or deliver AGE or AGE parts
perform aircraft support generator visual or service inspections
paint, stencil, or mark AGE
perform aircraft support air compressor visual or service inspections
perform gas turbine compressor visual or service inspections
clean and adjust spark plugs
clean vehicles
operate two-way vehicle radios
inspect vehicles for safety of operation
perform heater visual or service inspections
perform engine, motor, or generator operational checks
remove or install AGE tire, tube, or wheel assemblies
perform hydraulic test stand visual or service inspections
perform brake system operational checks
perform bomb lift visual or service inspections
reflectorize AGE
pack wheel bearings
adjust brake systems
load test generator sets
prepare AGE for mobility or training exercises
remove or install gauges
splice electrical system wiring
solder electrical system wiring
perform AGE hydraulic system operational checks
remove or install engine exhaust manifolds, seals, gaskets, or common hardware
perform foreign object damage prevention inspections
adjust contactor points

Such a configuration of tasks shows that first termers predominantly belonged to the AGE mechanics cluster. In fact, as shown in Figure 2, 56 percent of all first-termers were members of the AGE mechanics cluster. Eighty percent of all first-termers fell into one of the four maintenance-related job groups.

To determine more precisely which kinds of equipment first-termers worked on, and hence may need more training on, first-termer performance data for 228 types of AGE equipment and 37 types of test equipment or special tools were examined. Of these, at least ten percent of all first-termers were found to maintain those types of equipment shown in Tables 12 through 21. Together, these number 57 different types of AGE and 19 types of test equipment or special tools. When only those pieces of AGE maintained by at least 30 percent of all first termers are considered, the following observations may be noted. As shown in Tables 12 and 13, first-termers maintained five types of generators and four types of air compressors. Table 14 reveals that only two types of heaters were maintained, these being the 1H-1 Davey and the H-1. First-termers generally did not maintain air conditioners but did maintain MJ-1 and MJ-1A standard MFG bomb lifts, as seen in Tables 15 and 16, respectively. Similarly, blowers generally were not maintained, but MJ-2A hydraulic test stands were, as indicated in Tables 17 and 18. As Table 19 shows, few first-enlistment personnel maintained any nonpowered AGE. Finally, Tables 20 and 21 indicate first-termers used linear scale multimeters, 30 kw load banks, AC ammeters, torque wrenches, compression testers, fuel pressure gauges, oil pressure gauges, and ring compressors. Thus, survey data indicated first-termers may need training on a total of 12 different types of AGE and 8 types of test equipment or special tools. Of these types of equipment, the basic technical training course did not provide training on or with the following:

NF-2 generators
MD-3 generators
A/M32A-60 genertors
MD-3M generators
MC-1A Davey gasoline and diesel air compressors
MC-2A air compressors
H-1 heaters
MJ-1 bomb lifts
MJ-2A hydraulic test stands
AC ammeters

Interestingly, the basic course did include training on some types of equipment not generally maintained by first-termers. These included 2MC-11 air compressors maintained by less than two percent of first-termers and AM/32-5 air conditioners maintained by less than eight percent of first-termers. In addition, at the time this report was written, the course was planning to phase out training on MK-3A hydraulic test stands and replace it with instruction on the newer AMT27-2A model currently maintained by less than one percent of all first-termers. A more thorough treatment of training provided by the basic course is given under the Analysis of Training Documents later in this section.

FIGURE 2

PERCENT OF FIRST-TERMERS FOUND IN MAJOR JOB GROUPS
(N=1,389)

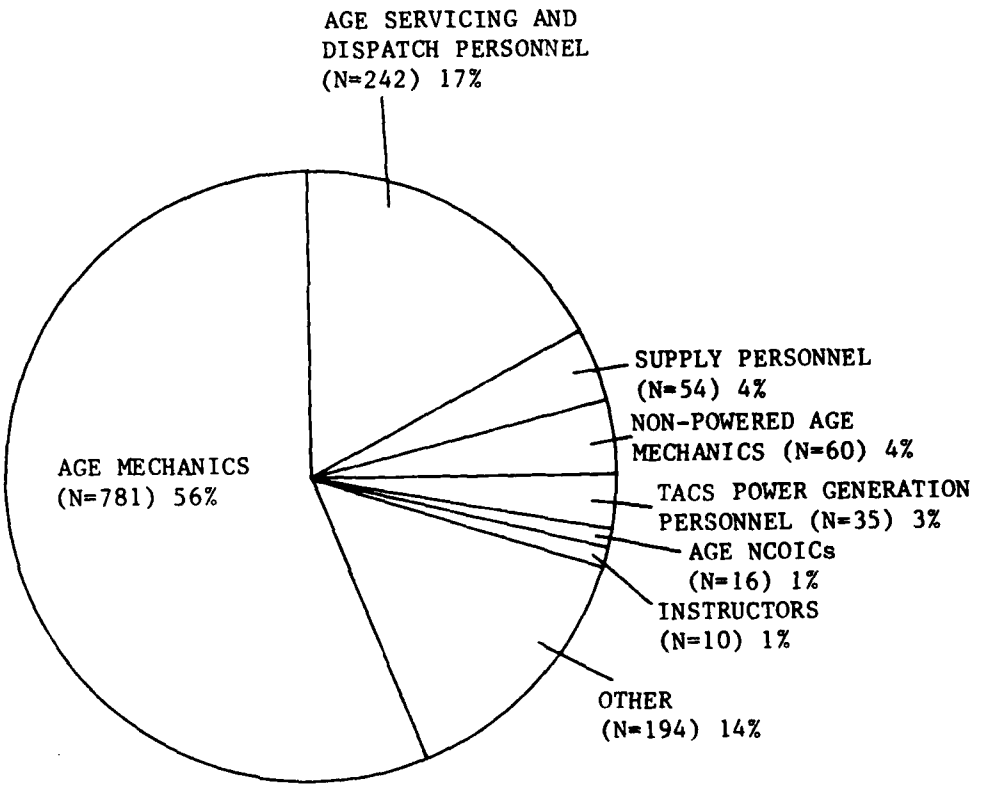

TABLE 12

AIRCRAFT SUPPORT GENERATORS MAINTAINED BY TEN PERCENT OR MORE FIRST-TERM PERSONNEL

TYPE OF GENERATOR	PERCENT RESPONDING
NF-2	65
*A/M32A-60A	57
MD-3	56
A/M32A-60	38
MD-3M	34
AM32C-86 HOBART	26
MD-3B	24
MD-3A	23
*MC-1A IDEAL	16
MD-4 ESSEX	15
MD-4 IDEAL ELECTRIC	15
*MC-1A KURZ AND ROOT	12
MD-4 ELECTRIC PRODUCTS	11
MD-4 ELECTRIC MACHINERY	11

* INCLUDED IN THE BASIC COURSE

TABLE 13

AIRCRAFT SUPPORT AIR COMPRESSORS MAINTAINED BY
TEN PERCENT OR MORE FIRST-TERM PERSONNEL*

TYPE OF AIR COMPRESSOR	PERCENT RESPONDING
MC-1A DAVEY (GASOLINE)	63
MC-2A	59
MC-1A DAVEY (DIESEL)	52
*MA-1A	31
MC-7 DAVEY	18
MC-1A WORTHINGTON	14

* INCLUDED IN THE BASIC COURSE: IN ADDITION, TRAINING IS PROVIDED ON 2MC-11 AIR COMPRESSORS - THESE ARE MAINTAINED BY LESS THAN TWO PERCENT OF ALL FIRST-TERMERS

TABLE 14

AIRCRAFT SUPPORT HEATERS MAINTAINED BY
TEN PERCENT OR MORE FIRST-TERM PERSONNEL

TYPE OF HEATER	PERCENT RESPONDING
*1H-1 DAVEY	51
H-1	45
BT400	22
HDU-13M	21

* INCLUDED IN THE BASIC COURSE

TABLE 15

AIRCRAFT SUPPORT AIR CONDITIONERS MAINTAINED BY TEN PERCENT OR MORE FIRST-TERM PERSONNEL*

TYPE OF AIR CONDITIONER	PERCENT RESPONDING
MA-3	29
AM/32C-10	27
MA-1A	27
AM/32C-10A	12

* BASIC COURSE PROVIDES TRAINING ON AM/32C-5 AIR CONDITIONERS: THESE ARE MAINTAINED BY LESS THAN EIGHT PERCENT OF FIRST-TERMERS

TABLE 16

AIRCRAFT SUPPORT BOMB LIFTS MAINTAINED BY TEN PERCENT OR MORE FIRST-TERM PERSONNEL

TYPE OF BOMB LIFT	PERCENT RESPONDING
MJ-1	37
*MJ-1A STANDARD MANUFACTURING	37
MHU-83B/E	26
MHU-83A/E	23
MJ-4	21

* INCLUDED IN THE BASIC COURSE

TABLE 17

AIRCRAFT SUPPORT BLOWERS MAINTAINED BY
TEN PERCENT OR MORE FIRST-TERM PERSONNEL*

TYPE OF BLOWER	PERCENT RESPONDING
A-1	18
MA-1	17
B-1	12

* NO BLOWERS ARE INCLUDED IN THE BASIC COURSE

TABLE 18

AIRCRAFT SUPPORT HYDRAULIC TEST STANDS MAINTAINED
BY TEN PERCENT OR MORE FIRST-TERM PERSONNEL

TYPE OF HYDRAULIC TEST STAND	PERCENT RESPONDING
MJ-2A	32
MJ-1	21
*MK-3A	16
MK-3	15
TTU-228/E SUN ELECTRIC	15
TTU-228/E SPRAGUE	13
MK-1	12

* PRESENTLY INCLUDED IN THE BASIC COURSE: TRAINING WILL BE PHASED OUT AND REPLACED WITH INSTRUCTION ON AMT27-2A HYDRAULIC TEST STANDS - THESE ARE MAINTAINED BY LESS THAN ONE PERCENT OF ALL FIRST-TERMERS.

TABLE 19

NON-POWERED AGE MAINTAINED BY TEN PERCENT OR MORE FIRST-TERM PERSONNEL*

TYPE OF NON-POWERED AGE	PERCENT RESPONDING
NITROGEN CARTS	24
MAINTENANCE STANDS	24
AIRCRAFT TOWBARS	24
AIRCRAFT JACKS	23
HYDRAULIC SERVICING CARTS	23
FUEL BOWSERS	22
LIQUID OXYGEN (LOX) CARTS	22
OIL SERVICING CARTS	20
GASEOUS OXYGEN CARTS	17
UTILITY TRAILERS	17
MAINTENANCE PLATFORMS	16
TANK DOLLIES	13
ENGINE STANDS/TRAILERS	12
JACK TRAILERS	11

* NO NON-POWERED AGE IS INCLUDED IN THE BASIC COURSE

TABLE 20

ELECTRICAL/ELECTRONIC TEST EQUIPMENT USED BY
TEN PERCENT OR MORE FIRST-TERM PERSONNEL

TYPE OF TEST EQUIPMENT	PERCENT USING
*MULTIMETERS, LINEAR SCALE	67
*LOAD BANKS (30KW)	64
AC AMMETERS	31
A/M 32A-60 ENGINE ANALYZER	23
MULTIMETERS, DIGITAL SCALE	17
DIFFERENTIAL VOLTMETERS (DC-AC)	15

* INCLUDED IN THE BASIC COURSE

TABLE 21

OTHER TEST EQUIPMENT AND SPECIAL TOOLS USED BY
TEN PERCENT OR MORE FIRST-TERM PERSONNEL

TYPE OF EQUIPMENT OR TOOL	PERCENT USING
*TORQUE WRENCHES	78
*COMPRESSION TESTERS	48
*FUEL PRESSURE GAUGES	46
*OIL PRESSURE GAUGES	43
*RING COMPRESSORS	34
VALVE SPRING COMPRESSORS	26
*HEATERS/AIR CONDITIONER THERMOMETERS	25
STROBE LIGHTS	25
MICROMETERS	24
TOXIC GAS HEATERS	23
HYDROSTATIC TESTERS	21
ENGINE ANALYZERS	17
HEATER TESTERS	17

* INCLUDED IN THE BASIC COURSE.

Training Emphasis and Task Difficulty

A number of types of information can and should be used in making decisions on Air Force training programs. The occupational analysis process provides information such as the percent members performing tasks, ratings by senior supervisors as to which tasks should be emphasized in training first-enlistment personnel, and ratings of the difficulty of all specialty tasks. (For a more complete explanation of how such data are collected and evaluated, see the INTRODUCTION section of this report.)

In this study, training emphasis and task difficulty data have been provided for each task covered in the survey. This section briefly describes what these types of data mean and gives examples of tasks high, average, and low in difficulty and training emphasis. In subsequent sections, these data are used to analyze special issues in the basic course and to evaluate career ladder training documents.

Training emphasis (TE) ratings indicate whether first-termers need formal training on the specific tasks in question; the higher the average TE rating, the greater the need for some type of formal training. Task difficulty ratings, on the other hand, apply to anyone in the career ladder and indicate how hard it is for an average person to learn to perform a particular task. A person will need more time to master a task high in difficulty that a task lower in difficulty.

Tables 22 and 23 present examples of tasks rank-ordered by training emphasis and task difficulty data, respectively. As Table 22 shows, inspection tasks were among those highest in training emphasis, refrigerant-related tasks were among those average in training emphasis, and aircraft maintenance tasks (cross-utilization tasks) were among those lowest in training emphasis. By contrast, Table 23 shows that troubleshooting solid-state and integrated circuits were among the two most difficult tasks in the career ladder, pneumatic low pressure system tasks were included with those average in difficulty, and tasks concerning painting and cleaning AGE were among those lowest in difficulty.

While tasks high in training emphasis are sometimes high in task difficulty as well, such is not always the case. This fact was particularly true in this study where several tasks low in task difficulty were high in training emphasis. For example, note that three of the five tasks low in difficulty shown in Table 23 were high in training emphasis. These three tasks were also performed by large percentages of first-termers and suggest tasks low in difficulty may be high in training emphasis because many first-termers perform them. In general, tasks low in difficulty may be high in training emphasis for at least two reasons: the criticality of the tasks to mission accomplishment and safety. Consequently, training managers should consider all the information available for a task before deciding whether to include it in formal training.

In summary, training emphasis and task difficulty data are provided for all tasks and offer different, but complementary, types of information about each task that, when combined with percent performing data, provide a powerful basis for objective career ladder training decisions.

Special Issues in the Basic Course

At the request of basic course personnel, this discussion addresses certain special questions concerning first-termer training needs. These questions were:

> Do first termers need training on how to tow AGE and use two-way radios?
> Do they need training on how to maintain and service load banks as opposed to just using them?
> Do they need training on how to maintain diesel engines?

Table 24 presents data for various towing-related tasks and two-way radio use. Based strictly on the data shown, first-termer training appears unnecessary for each towing task in the table. Only the two-way radio task may warrant some training, but it is not clear from the data that such training should be included in the basic course. Training emphasis for this task is above average, but not high. The percent of first termers performing the task is substantial, but less than half. Finally, task difficulty is noticeably below average. Perhaps these data indicate some sort of on-the-job training in two-way radio use would be most appropriate.

Table 25 provides data for first-termer maintenance and use of load banks. Training emphasis and task difficulty data suggest formal first-termer training would be appropriate for the maintenance, as well as the use of load banks. Percent performing data indicate the use of load banks should be taught in the basic course. On the other hand, very few first-termers maintain load banks. Therefore, other factors (such as projected career field changes) should be used to determine whether load bank maintenance belongs in the resident course.

Table 26 displays data for several diesel engine maintenance tasks. Virtually all of these tasks are high in training emphasis, as well as task difficulty. Consequently, formal first-termer training is clearly desirable. Inclusion of this training in the basic course, however, may not be advisable at present, since percent performing is uniformly low. Nevertheless, training on diesel engine maintenance may need to be included in the basic course at some future time when diesel-powered AGE has become more prevalent.

In summary, some kind of formal training seems advisable for two-way radio use and maintenance of load banks as well as diesel engines. No formal training seems necessary for AGE towing tasks.

Analysis of Training Documents

The data presented so far may be used to evaluate the career ladder Specialty Training Standard (STS) and the basic course Plan of Instruction (POI). To permit such evaluation, technical school personnel at Chanute AFB matched survey tasks to appropriate sections of the STS and POI. This match led to a computer-produced STS and POI annotated with tasks matched by the technical school. These annotated training documents also listed all

tasks that were not matched to any section or element. To ensure the match of tasks with the STS and POI were accurate, the computer-annotated documents were reviewed three times: once, by technical school personnel; again, by data applications personnel at the Occupational Measurement Center; and finally, by the analyst who would write the survey report. In their final forms, these annotated documents show training emphasis and difficulty ratings, as well as the percent of enlistment and skill-level groups performing, for each task. To aid in reviewing career ladder training programs, the completed documents have been forwarded to the technical school. Highlights of the STS and POI data are presented below.

The STS was extremely well supported by survey data and all elements of the STS appeared justified. Of the 615 tasks included in the survey, only 27 were not matched to the STS. Of these, 16 were above average in training emphasis and are shown in Table 27. Note that only six of these tasks were considered high in training emphasis. Most of the unmatched tasks concerned visual, service, or periodic inspections. A few of the tasks were related to maintenance of electrical or electronic circuits.

Although survey data also supported existing POI criterion objectives, a number of tasks were not matched to any POI criterion objectives, suggesting some expansion of the POI may be desirable. A total of 226 tasks above average in training emphasis were not matched to the POI. Of these, 41 tasks were considered high in training emphasis. However, training emphasis ratings merely indicate whether some kind of formal training is desirable and do not, by themselves, suggest whether training should be by basic residence course, follow-on course, or OJT. Table 28 shows those tasks high in training emphasis and performed by at least 50 percent of first-term personnel. Note that only two of these tasks had difficulty ratings greater than 4.0 and only six had ratings greater than 3.0. These six tasks, which mainly deal with removing or replacing parts of AGE, may need to be included in the basic course POI. In addition, Table 29 lists tasks high in training emphasis, performed by 30-49 percent of first-termers, and average or higher in difficulty. These 14 tasks should be reviewed to determine if basic residence training would be appropriate. The majority of tasks listed were related to engine, motor, or generator maintenance. Others covered heater, electric circuit, and hydraulic system maintenance.

Training Analysis Summary

This study found that the STS gave exhaustive coverage of career ladder tasks. Also, the basic course POI provided training on most tasks performed by first-termers, although some exceptions were noted. However, training managers may need to review what specific types and models of equipment are covered in the basic course. Several instances were found in which specific models of equipment maintained by a large percentage of first-term airmen were not included in the basic course, while other models maintained by few first-termers were included. Finally, in response to specific questions raised by technical school personnel, this study found that formal training for first-termers on two-way radio use, maintenance of diesel engines, and maintenance of load banks may be desirable, but need not necessarily be included in the basic course. Further, no formal training appeared justified for towing tasks.

TABLE 22

EXAMPLES OF TASKS IN DESCENDING ORDER OF TRAINING EMPHASIS

TASKS		TRAINING EMPHASIS*	PERCENT FIRST-ENLISTMENT PERFORMING	TASK DIFFICULTY**
F160	PERFORM GAS TURBINE COMPRESSOR VISUAL OR SERVICE INSPECTIONS	7.2	59	5.0
F162	PERFORM HYDRAULIC TEST STAND VISUAL OR SERVICE INSPECTIONS	7.1	59	5.7
G179	PERFORM GAS TURBINE COMPRESSOR PERIODIC INSPECTIONS	7.1	33	6.3
F152	PERFORM AIRCRAFT SUPPORT AIR COMPRESSOR VISUAL OR SERVICE INSPECTIONS	7.0	62	4.5
F154	PERFORM AIRCRAFT SUPPORT GENERATOR VISUAL OR SERVICE INSPECTIONS	6.9	61	5.1
.		.	.	.
.		.	.	.
.		.	.	.
K385	REMOVE OR INSTALL REFRIGERANT OR EQUIPMENT COOLER DUMP VALVES	3.2	5	5.9
H229	REMOVE OR INSTALL INTEGRATED CIRCUITRY	3.1	12	5.4
L403	CALIBRATE HYDRAULIC GAUGES	3.1	13	4.7
K382	REMOVE OR INSTALL REFRIGERANT EVAPORATORS	3.1	5	6.9
I324	STOP-DRILL OR FILE ENGINE CYLINDER COOLING FINS	3.1	8	3.6
.		.	.	.
.		.	.	.
.		.	.	.
S601	REMOVE AIRCRAFT TIRES	0.0	1	5.7
S602	REMOVE OR INSTALL AIRCRAFT EXTERNAL FUEL TANKS	0.0	1	6.4
S603	REMOVE OR INSTALL AIRCRAFT PODS	0.0	1	5.8
S604	REMOVE OR REPLACE AIRCRAFT BRAKE ASSEMBLIES	0.0	1	6.5
S605	REMOVE OR REPLACE RADOMES	0.0	1	6.5

* AVERAGE TRAINING EMPHASIS RATING WAS 3.1
HIGH TRAINING EMPHASIS WAS CONSIDERED 5.0 OR BETTER

** AVERAGE TASK DIFFICULTY WAS 5.0
HIGH TASK DIFFICULTY WAS CONSIDERED 6.0 OR BETTER

TABLE 23

EXAMPLES OF TASKS IN DESCENDING ORDER OF TASK DIFFICULTY

TASKS		TASK DIFFICULTY*	PERCENT FIRST-ENLISTMENT PERFORMING	TRAINING EMPHASIS**
H205	ISOLATE MALFUNCTIONS WITHIN SOLID-STATE CIRCUITRY	7.9	10	4.4
H204	ISOLATE MALFUNCTIONS WITHIN INTEGRATED CIRCUITRY	7.7	11	4.1
A7	DRAFT BUDGET OR FINANCIAL REQUIREMENTS	7.7	2	0.1
H195	CALIBRATE ELECTRONIC SYSTEMS USING OSCILLOSCOPES	7.3	4	1.9
D84	DEVELOP RESIDENT COURSE OR CAREER DEVELOPMENT COURSE (CDC) CURRICULUM MATERIALS	7.2	2	0.2
.		.	.	.
.		.	.	.
.		.	.	.
H192	CALIBRATE ELECTRICAL GAUGES	5.0	15	2.6
M462	REMOVE OR INSTALL PNEUMATIC LOW PRESSURE SYSTEM COMPONENT PARTS	5.0	16	4.2
I301	REMOVE OR INSTALL GENERATOR COOLING FANS	5.0	18	4.1
K367	PURGE REFRIGERANT SYSTEMS	5.0	11	4.7
M461	REMOVE OR INSTALL PNEUMATIC LOW PRESSURE SYSTEM COMPONENTS	5.0	17	4.4
.		.	.	.
.		.	.	.
.		.	.	.
N478	PAINT, STENCIL, OR MARK AGE	2.9	67	4.7
S612	TOW FLIGHTLINE NON-POWERED AGE	2.8	16	1.6
N484	REFLECTORIZE AGE	2.4	58	4.0
S600	POSITION OR REMOVE AIRCRAFT CHOCKS	2.2	2	0.2
P544	CLEAN VEHICLES	2.1	55	3.2

* AVERAGE TASK DIFFICULTY WAS 5.0
HIGH TASK DIFFICULTY WAS CONSIDERED 6.0 OR BETTER

** AVERAGE TRAINING EMPHASIS WAS 3.1
HIGH TRAINING EMPHASIS WAS CONSIDERED 5.0

TABLE 24

FIRST-TERMER PERFORMANCE OF AGE TOWING AND TWO-WAY RADIO TASKS

TASKS		TRAINING EMPHASIS*	PERCENT FIRST-ENLISTMENT PERFORMING	TASK DIFFICULTY**
0542	TOW FUEL TRAILERS	0.9	6	3.8
0543	TOW MOBILIZED EQUIPMENT OTHER THAN FUEL TRAILERS	0.9	8	4.3
S599	POSITION NON-POWERED OR POWERED AGE TO AIRCRAFT	2.0	19	3.2
S611	TOW AIRCRAFT	0.3	3	4.9
S612	TOW FLIGHTLINE NON-POWERED AGE	1.6	16	2.8
S613	TRANSPORT TEST EQUIPMENT OR UNITS TO OR FROM FLIGHTLINE OTHER THAN AGE	0.6	4	3.1
S614	WALK WINGS OR TAILS DURING AIRCRAFT TOWING OPERATIONS	0.3	2	2.6
P552	OPERATE TWO-WAY VEHICLE RADIOS	4.1	42	2.7

* AVERAGE TRAINING EMPHASIS WAS 3.1.
HIGH TRAINING EMPHASIS WAS CONSIDERED 5.0 OR BETTER

** AVERAGE TASK DIFFICULTY WAS 5.0
HIGH TASK DIFFICULTY WAS CONSIDERED 6.0 OR BETTER

TABLE 25

FIRST-TERMER PERFORMANCE OF LOAD BANK TASKS

TASKS		TRAINING EMPHASIS*	PERCENT FIRST-ENLISTMENT PERFORMING	TASK DIFFICULTY**
H230	REMOVE OR INSTALL LOAD BANK COMPONENT PARTS	4.2	17	4.7
H231	REMOVE OR INSTALL LOAD BANK COMPONENTS	4.2	17	4.6
I268	LOAD TEST GENERATOR SETS	6.5	55	4.7

* AVERAGE TRAINING EMPHASIS WAS 3.1
HIGH TRAINING EMPHASIS WAS CONSIDERED 5.0 OR BETTER

** AVERAGE TASK DIFFICULTY WAS 5.0
HIGH TASK DIFFICULTY WAS CONSIDERED 6.0 OR BETTER

TABLE 26

FIRST-TERMER PERFORMANCE OF DIESEL ENGINE TASKS

TASKS		TRAINING EMPHASIS*	PERCENT FIRST-ENLISTMENT PERFORMING	TASK DIFFICULTY**
I240	ADJUST DIESEL ENGINE FUEL INJECTORS	6.1	15	6.6
I241	ADJUST DIESEL ENGINE FUEL RACKS	5.2	12	6.5
I242	ADJUST DIESEL ENGINE GOVERNORS	6.4	26	6.1
I258	CLEAN DIESEL ENGINE FUEL INJECTORS	5.5	15	4.9
I276	REMOVE OR INSTALL DIESEL ENGINE FUEL INJECTOR FUEL LINES	5.1	16	4.7
I277	REMOVE OR INSTALL DIESEL ENGINE FUEL INJECTORS	5.8	14	5.6
I278	REMOVE OR INSTALL DIESEL ENGINE FUEL INJECTORS	5.3	11	5.8
I279	REMOVE OR INSTALL DIESEL ENGINE IGNITER PLUGS	4.8	15	4.5
I328	TIME DIESEL ENGINE FUEL INJECTORS	5.4	9	6.7
I329	TIME DIESEL INJECTOR PUMPS	5.0	6	6.9

* AVERAGE TRAINING EMPHASIS WAS 3.1
HIGH TRAINING EMPHASIS WAS CONSIDERED 5.0 OR BETTER

** AVERAGE TASK DIFFICULTY WAS 5.0
HIGH TASK DIFFICULTY WAS CONSIDERED 6.0 OR BETTER

TABLE 27

TASKS NOT MATCHED TO STS
(DESCENDING ORDER OF TRAINING EMPHASIS)

TASKS		TRAINING EMPHASIS*	PERCENT FIRST-ENLISTMENT PERFORMING	TASK DIFFICULTY**
H236	RESEARCH TOs, CHARTS, OR DIAGRAMS FOR ELECTRICAL MAINTENANCE INSTRUCTIONS	6.2	45	5.7
F158	PERFORM CABIN LEAKAGE OR PRESSURE TESTER VISUAL OR SERVICE INSPECTIONS	5.7	31	4.7
G177	PERFORM CABIN LEAKAGE OR PRESSURE TESTER PERIODIC INSPECTIONS	5.5	17	5.6
F170	PERFORM SHOP SUPPORT EQUIPMENT VISUAL OR SERVICE INSPECTIONS	5.3	37	3.6
G175	PERFORM BLOWER PERIODIC INSPECTIONS	5.3	23	4.1
F156	PERFORM BLOWER VISUAL OR SERVICE INSPECTIONS	5.1	30	3.7
H205	ISOLATE MALFUNCTIONS WITHIN SOLID-STATE CIRCUITRY	4.7	10	7.9
N483	PURGE FUEL TANKS	4.4	37	3.5
F169	PERFORM NON-POWERED AGE VISUAL OR SERVICE INSPECTIONS	4.1	21	3.6
N476	ISOLATE PROPULSION SYSTEM MALFUNCTIONS	4.1	19	5.4
N480	PERFORM PROPULSION SYSTEM OPERATIONAL CHECKS	3.8	29	3.1
G188	PERFORM NON-POWERED AGE PERIODIC INSPECTIONS	3.7	16	4.4
N474	ADJUST PROPULSION SYSTEMS	3.7	21	5.3
F163	PERFORM LIQUID OXYGEN OR NITROGEN EQUIPMENT VISUAL OR SERVICE INSPECTIONS	3.6	21	4.7
N496	REMOVE OR INSTALL PROPULSION SYSTEM COMPONENTS	3.2	21	5.1
N497	REMOVE OR INSTALL PROPULSION SYSTEM COMPONENT PARTS	3.2	17	5.0

* AVERAGE TRAINING EMPHASIS WAS 3.1
HIGH TRAINING EMPHASIS WAS CONSIDERED 5.0 OR BETTER

** AVERAGE TASK DIFFICULTY WAS 5.0
HIGH TASK DIFFICULTY WAS CONSIDERED 6.0 OR BETTER

TABLE 28

TASKS NOT REFERENCED TO POI: PERFORMED BY 50 PERCENT OR MORE FIRST-TERMERS
(DESCENDING ORDER OF TRAINING EMPHASIS)

TASKS		TRAINING EMPHASIS*	PERCENT FIRST-ENLISTMENT PERFORMING	TASK DIFFICULTY**
I286	REMOVE OR INSTALL ENGINE FUEL PUMPS	5.1	54	4.2
N489	REMOVE OR INSTALL BATTERIES	5.1	73	2.7
I314	REMOVE OR INSTALL STARTERS	5.0	51	4.1
H190	ADJUST CONTACTOR POINTS	4.8	54	3.8
P548	FUEL AGE	4.6	55	2.7
I303	REMOVE OR INSTALL IGNITION COILS	4.3	51	3.9
H228	REMOVE OR INSTALL GAUGES	4.3	61	3.7
N494	REMOVE OR INSTALL HINGES, STAYS, OR FASTENERS	3.9	63	2.8
N504	STRAIGHTEN PANELS, DOORS, OR COVERS	3.6	55	3.1
Q568	PERFORM GENERAL SHOP HOUSEKEEPING, SUCH AS CLEANING DRIP PANS AND SWEEPING FLOORS	3.5	61	2.0
P544	CLEAN VEHICLES	3.2	55	2.1

* AVERAGE TRAINING EMPHASIS WAS 3.1
HIGH TRAINING EMPHASIS WAS CONSIDERED 5.0 OR BETTER

** AVERAGE TASK DIFFICULTY WAS 5.0
HIGH TASK DIFFICULTY WAS CONSIDERED 6.0 OR BETTER

TABLE 29

TASKS NOT REFERENCED TO POI: PERFORMED BY 30-49 PERCENT OF FIRST-TERMERS WITH SUBSTANTIAL TASK DIFFICULTY (DESCENDING ORDER OF TRAINING EMPHASIS)

TASKS		TRAINING EMPHASIS*	PERCENT FIRST-ENLISTMENT PERFORMING	TASK DIFFICULTY**
I322	RESEARCH TOs FOR MAINTENANCE INSTRUCTIONS ON ENGINES, MOTORS, OR GENERATORS	6.2	46	5.2
I245	ADJUST GAS RECIPROCATING ENGINE GOVERNORS	6.1	46	5.6
I255	CHANGE GENERATORS OR ALTERNATORS	5.7	49	5.6
F158	PERFORM CABIN LEAKAGE OR PRESSURE TESTER VISUAL OR SERVICE INSPECTIONS	5.7	31	4.7
I299	REMOVE OR INSTALL ENGINES, MOTORS, OR GENERATORS	5.4	41	6.1
I315	REMOVE OR INSTALL TURBINE ENGINE ATOMIZER COMPONENTS	5.3	32	4.9
L421	REMOVE OR INSTALL HYDRAULIC LINES OR FITTINGS	5.3	39	4.9
L405	DRAIN, FLUSH, AND REFILL HYDRAULIC RESERVOIRS	5.1	35	4.6
J340	REMOVE OR INSTALL BURNER CONTROL VALVES	5.0	33	4.9
J355	REMOVE OR INSTALL TEMPERATURE SELECTOR VALVES	5.0	35	5.0
M444	BUILD BLEED AIR HOSES	5.0	32	5.6
H227	REMOVE OR INSTALL ELECTRICAL SYSTEM COMPONENTS OTHER THAN INTEGRATED OR SOLID-STATE CIRCUITRY	4.9	38	4.9
H225	REMOVE OR INSTALL CANNON PLUG PARTS	4.7	38	5.2
H202	FABRICATE WIRING OR WIRE HARNESSES	4.7	32	5.5

* AVERAGE TRAINING EMPHASIS WAS 3.1
HIGH TRAINING EMPHASIS WAS CONSIDERED 5.0 OR BETTER

** AVERAGE TASK DIFFICULTY WAS 5.0
HIGH TASK DIFFICULTY WAS CONSIDERED 6.0 OR BETTER

OTHER ANALYSES

Besides the analyses presented so far, the survey results were also examined in terms of whether respondents were assigned overseas, which major command they belonged to, and whether they worked under POMO. Except in the CONUS versus Overseas comparison, some interesting trends were found and are discussed.

CONUS Versus Overseas

No significant differences between CONUS and overseas jobs were found, except that CONUS personnel were slightly more likely to maintain the A/M32C-86 Hobart Generator (30 percent versus 11 percent) and the MA-3 Air Compressor (32 percent versus 20 percent). Otherwise, CONUS and overseas jobs were very similar.

Comparison of MAJCOMs

Overall, career ladder personnel performed about the same tasks, regardless of MAJCOM to which they were assigned. Nevertheless, of the operational commands, SAC personnel performed the broadest, most complex job, averaging 113 tasks with a JDI of 14.0, while PACAF personnel performed the most restricted, least difficult job, averaging 86 tasks with a JDI of 12.0. Personnel in ATC performed an even narrower job, averaging 78 tasks with a JDI of 12.5. These 158 ATC personnel, incidentally, were predominantly AGE mechanics maintaining equipment on ATC flightlines in support of the flying training mission.

In spite of their relative similarity in task performance, Tables 30 through 34 show that MAJCOM personnel did differ in terms of the equipment they performed those tasks on. Overall, the tables suggest the commands tended to form three groups: TAC, USAFE, and PACAF appeared fairly similar; SAC and MAC also looked alike; and ATC stood alone. Equipment that tended to distinguish TAC, USAFE, and PACAF from the other MAJCOMs included:

AM/32C-10 Air Conditioners (Table 31)
MHU-83B/E Bomb Lifts (Table 32)

Equipment that appeared more characteristic of SAC and MAC included:

MD-3M Generators (Table 30)
MA-3 Air Conditioners (Table 31)
BT400 Heaters (Table 31)
H-1 Heaters (Table 31)
MJ-2A Hydraulic Test Stands (Table 32)
Valve Spring Compressors (Table 34)

Finally, equipment more or less unique to ATC included:

MK-1 Hydraulic Test Stands (Table 32)
MK-3 Hydraulic Test Stands (Table 32)
MK-3A Hydraulic Test Stands (Table 32)

Other highlights of the MAJCOM equipment tables are as follows: SAC and MAC seemed to maintain the widest range of equipment, especially of generators and air compressors, as shown in Table 30, and heaters, as evident in Table 31. Additionally, Table 34 indicates both of these MAJCOMs, and SAC in particular, used the widest range of test equipment. USAFE and TAC personnel maintained the greatest variety of bomb lifts, followed closely by PACAF and SAC, as indicated in Table 32. In addition, TAC and USAFE, as Table 33 suggests, were virtually the sole users of nonpowered AGE, with TAC having the largest percentage of personnel maintaining such equipment. Finally, Table 34 shows the six MAJCOMs fairly similar in their use of test equiment and special tools, although, as mentioned, TAC, USAFE, and PACAF personnel used a somewhat narrower range than the others.

POMO Versus Non-POMO

While the CONUS-Overseas and MAJCOM analyses were fairly straightforward, analysis of personnel working under POMO versus those not under POMO had to be somewhat more complex. Some surveys of other specialties affected by POMO have indicated job descriptions and morale effects of POMO are different for personnel assigned to flightline jobs versus those working in shops. Consequently, this study separated career ladder personnel into six groups: POMO shop versus non-POMO shop personnel; POMO flightline versus non-POMO flightline personnel; and POMO shop/flightline versus non-POMO shop/flightline personnel. As shown in Table 35, the majority of career ladder personnel fell into the two shop groups with two-thirds of those being under POMO. Flightline/shop personnel, who--as their name indicates--worked in both flightline and shop environments, made up most of the remainder of the career ladder. Very few members belonged to the purely flightline groups; consequently, these 47 personnel were not considered in this analysis.

Since any differences found between POMO and non-POMO groups could be due to a number of factors besides the management system personnel are under, Table 35 compares the groups on several factors that could influence job description or morale. Generally, background characteristics of POMO versus non-POMO groups appear similar. Non-POMO groups were just slightly more senior than their POMO comparison groups, and both POMO groups were somewhat more likely to be assigned to the CONUS. No other important differences appear in the table.

POMO and non-POMO groups were first compared for important differences in tasks performed. Briefly, none were found. Next, the groups were compared for differences in equipment maintained. Not surprisingly, the equipment comparison of POMO with non-POMO groups closely paralleled the

preceding MAJCOM analysis. This finding was expected since the tactically oriented commands--TAC, USAFE, and PACAF--are all under POMO, whereas SAC, MAC, and ATC are not. Therefore, the reader is referred to the MAJCOM comparison for detailed discussion of equipment differences.

Since no differences in task performance between POMO versus non-POMO groups were found, and since equipment differences were related to MAJCOM differences, POMO itself was considered to have little direct effect on personnel's job descriptions. Whether POMO impacts on job satisfaction is another question; however, it is not directly answerable because, as noted, POMO is linked to MAJCOM. Consequently, job satisfaction under POMO could be greatly influenced by other MAJCOM factors that have nothing to do with POMO itself. Nevertheless, a job satisfaction comparison of POMO versus non-POMO groups was undertaken and turned up some interesting findings.

Table 36 presents job satisfaction data for the POMO and non-POMO groups. Among shop personnel, no differences between POMO and non-POMO groups appeared, except that POMO personnel found their jobs slightly less interesting than non-POMO personnel. Among flightline/shop personnnel, a different picture emerged. First, POMO personnel tended to feel their talents were less well used than non-POMO personnel. Second, POMO personnel were somewhat less satisfied with the sense of accomplishment their job gave them. Yet, reenlistment intentions were the same for all groups. We can conclude from these data that there are no major differences between POMO and non-POMO personnel.

Analysis of Write-In Comments

Survey respondents are encouraged to write in comments about their jobs. In this study, 94 respondents did so. Although most of these comments formed no pattern nor revealed any trends, seven different respondents did strike a common theme. Each indicated that, for one reason or another, he or she was not allowed to maintain AGE. Excerpts from these comments are given below:

> "My job does not permit me to use my talents and compete for advancement."
>
> "This job has shown me what a grave mistake I've made by joining the Air Force. I hope you can get an idea of just how little I do here."
>
> "I spend too much of my time ensuring people attend briefings and appointments."
>
> "My job entails coordinating 'self help' projects."

"I spend 95% of my time working as the Wing Industrial Safety NCO. I would be much happier if better utilized in my AFSC."

"I have not seen any flightline equipment since tech school. They have added bomb lifts to our CDCs and I have never seen a bomb lift."

TABLE 30

EQUIPMENT MAINTAINED BY MAJCOM*
GENERATORS, AIR COMPRESSORS, AND BLOWERS
(PERCENT RESPONDING)

GENERATORS	TAC	USAFE	PACAF	SAC	MAC	ATC
A/M32A-60	35	37	49	18	45	26
A/M32A-60A	52	52	52	70	51	13
A/M32C-86 HOBART	13	1	38	62	33	4
MD-3	44	49	49	50	61	47
MD-38	15	14	21	32	43	14
MD-3M	23	22	29	53	54	45
MD-4 ESSEX	21	7	20	31	14	10
NF-2	58	56	55	67	72	42
AIR COMPRESSORS						
MA-1A	16	25	26	38	41	35
MA-1A DAVEY (DIESEL)	46	32	53	53	66	48
MA-1A DAVEY (GASOLINE)	50	58	43	63	69	51
MC-2A	54	57	49	65	70	43
MC-7 DAVEY	11	24	20	20	34	3
BLOWERS						
A-1	17	23	17	33	26	1

* SPECIFIC EQUIPMENT LISTED IF MAINTAINED BY 30 PERCENT OR MORE PERSONNEL IN AT LEAST ONE MAJCOM

TABLE 31

EQUIPMENT MAINTAINED BY MAJCOM*
AIR CONDITIONERS AND HEATERS
(PERCENT RESPONDING)

AIR CONDITIONERS	TAC	USAFE	PACAF	SAC	MAC	ATC
AM/32C-10	40	32	38	4	4	6
MA-3	16	13	23	67	38	10
HEATERS						
BT400	13	24	8	33	41	6
H-1	31	44	17	52	53	21
1H-1 DAVEY	50	50	31	37	62	36
HDU-13/M	24	21	7	26	34	19

* SPECIFIC EQUIPMENT LISTED IF MAINTAINED BY 30 PERCENT OR MORE PERSONNEL IN AT LEAST ONE MAJCOM

TABLE 32

EQUIPMENT MAINTAINED BY MAJCOM*
BOMB LIFTS AND HYDRAULIC TEST STANDS
(PERCENT RESPONDING)

BOMB LIFTS	TAC	USAFE	PACAF	SAC	MAC	ATC
MHU-83A/E	22	40	13	34	1	6
MHU-83B/E	36	39	32	9	1	7
MJ-1	35	49	43	33	4	18
MJ-1 STANDARD MFG	50	45	41	21	3	19
HYDRAULIC TEST STANDS						
MJ-2A	26	25	25	34	45	29
MK-1	4	2	4	20	17	39
MK-3	11	12	9	11	19	32
MK-3A	16	9	12	20	21	33

* SPECIFIC EQUIPMENT LISTED IF MAINTAINED BY 30 PERCENT OR MORE PERSONNEL IN AT LEAST ONE MAJCOM

TABLE 33

EQUIPMENT MAINTAINED BY MAJCOM*
NON-POWERED AGE
(PERCENT RESPONDING)

NON-POWERED AGE	TAC	USAFE	PACAF	SAC	MAC	ATC
AIRCRAFT JACKS	33	24	13	2	12	14
AIRCRAFT TOWBARS	33	23	13	1	18	13
LIQUID OXYGEN CARTS	33	23	12	1	6	7
MAINTENANCE STANDS	33	24	12	3	18	13
NITROGEN CARTS	33	23	13	10	9	11
OIL SERVICING CARTS	31	23	11	2	4	4

* SPECIFIC EQUIPMENT LISTED IF MAINTAINED BY 30 PERCENT OR MORE PERSONNEL IN AT LEAST ONE MAJCOM

TABLE 34

EQUIPMENT USED BY MAJCOM*
TEST EQUIPMENT AND SPECIAL TOOLS
(PERCENT RESPONDING)

EQUIPMENT/TOOL	TAC	USAFE	PACAF	SAC	MAC	ATC
AC AMMETERS	31	29	25	29	27	27
A/M 32A-60 ENGINE ANALYZER	27	35	22	24	17	22
LOAD BANKS (30KW)	59	65	44	64	71	61
MULTIMETERS, LINEAR SCALE	61	60	54	71	68	72
COMPRESSION TESTERS	46	40	45	59	57	50
FUEL PRESSURE GAUGES	40	40	34	60	53	51
HEATERS/AC THERMOMETERS	25	17	20	32	30	29
HYDROSTATIC TESTERS	21	17	20	36	21	25
MICROMETERS	26	21	21	37	21	35
OIL PRESSURE GAUGES	43	35	35	47	43	45
RING COMPRESSORS	28	26	28	49	45	29
STROBE LIGHTS	23	21	15	47	35	34
TORQUE WRENCHES	72	72	73	86	80	75
TOXIC GAS DETECTORS	24	27	12	28	31	21
VALVE SPRING COMPRESSORS	22	22	20	38	35	27

* SPECIFIC EQUIPMENT LISTED IF MAINTAINED BY 30 PERCENT OR MORE PERSONNEL IN AT LEAST ONE MAJCOM

TABLE 35

POMO AND NON-POMO GROUP BACKGROUND CHARACTERISTICS

	SHOP ONLY		FLIGHTLINE/SHOP		FLIGHTLINE ONLY	
	POMO	NON-POMO	POMO	NON-POMO	POMO	NON-POMO
NUMBER	978	568	313	95	40	7
PERCENT OF SAMPLE	49%	28%	16%	5%	2%	0%
PERCENT WHO ARE FEMALE	12%	11%	10%	4%	10%	0%
SKILL LEVEL						
42335	17%	13%	13%	17%	70%	14%
42355	63%	63%	67%	62%	78%	43%
42375	20%	24%	20%	21%	3%	29%
AVG GRADE	E-4	E-4	E-4	E-4	E-4	E-4
AVG TAFMS IN MONTHS	60	68	64	66	38	76
PERCENT FIRST ENLISTMENT	60%	54%	58%	52%	78%	57%
PERCENT SECOND ENLISTMENT	20%	21%	20%	23%	18%	0%
PERCENT CAREER	20%	25%	22%	35%	4%	43%
PERCENT CONUS	33%	25%	36%	31%	25%	14%
PERCENT OVERSEAS	67%	75%	64%	69%	75%	86%
AVG NO TASKS PERFORMED	111	116	105	100	75	125
ATDPUTS	4.6	4.6	4.4	4.5	4.2	4.5
JDI	13.3	13.9	12.4	12.6	9.7	13.8

TABLE 36

JOB SATISFACTION OF POMO VERSUS NON-POMO PERSONNEL
BY WORK SETTING

	SHOP PERSONNEL		FLIGHTLINE/SHOP PERSONNEL	
	POMO (N=978)	NON-POMO (N=568)	POMO (N=313)	NON-POMO (N=95)
FINDS JOB:				
DULL	11	9	12	11
SO-SO	21	16	74	20
INTERESTING	66	74	61	65
FEELS TALENT USED:				
LITTLE OR NOT AT ALL	19	18	26	18
FAIRLY WELL OR BETTER	80	82	73	81
FEELS TRAINING USED:				
LITTLE OR NOT AT ALL	16	20	25	23
FAIRLY WELL OR BETTER	84	80	74	75
SATISFIED WITH SENSE OF ACCOMPLISHMENT:				
NO	16	15	25	21
AMBIVALENT	12	14	21	13
YES	72	71	54	66
PLAN TO REENLIST:				
WILL RETIRE	3	3	5	3
NO	34	33	32	37
YES	63	64	62	60

* COLUMN TOTALS MAY NOT EQUAL 100 PERCENT IF PERSONNEL LEFT ITEMS BLANK

COMPARISON TO PREVIOUS SURVEY

The 423X5 career ladder appears to have undergone some diversification since 1977, when the last occupational survey was conducted. Although the specialty has remained generally homogeneous as in 1977, the following specialized groups identified in the current OSR were not found in the previous study:

Turbine Engine Mechanics (GRP552, N=46)
Diesel Engine Mechanics (GRP377, N=10)
Heater Mechanics (GRP514, N=46)
Non-Powered AGE Mechanics (GRP 098, N=85)

Further, within many of the job groups found in both studies, greater diversity was apparent in the 1983 occupational survey. For example, both studies identified a TACS job group; however, the earlier report found TACS personnel to be highly uniform, whereas the current report found them divided into three specialized groups. Similarly, the NCOIC and quality control groups also appeared more diversified in the present study.

Besides the trend toward greater diversity, the present study found electrical and electronic maintenance tasks more pervasive than the previous survey. In the 1977 OSR, personnel who maintained electrical systems were clearly identifiable from others in the career ladder and formed three distinctive job groups. By contrast, performance of electrical maintenance tasks was so widespread in 1983 that no group emerged as more specialized in such maintenance than others. The only exception to this finding were the electricians, who made up over half of the TACS power generation job group. Thus, while the career ladder has become somewhat more diverse since 1977, performance of electrical maintenance has become more common.

One of the more interesting comparisons between surveys of the same specialty at different points in time is of job satisfaction data. Such a comparison shows whether people's feelings about their jobs has improved, worsened, or remained the same over the years and highlights problem areas that may need to be addressed. As Table 37 indicates, job satisfaction has remained very good since 1977. Second-enlistment and career personnel have shown virtually no change since the earlier survey. First-enlistment airmen have shown some noticeable improvement, however. The degree of improvement was most obvious with how well first-termers felt their job used their talents and how interesting they found their job, but all four measures reflected the same trend. Thus, first-termers appear somewhat happier today than in 1977, while second-enlistment and career personnel are as happy as in 1977.

TABLE 37

JOB SATISFACTION COMPARISON OF 1983 AND 1977 SAMPLES*

	FIRST-ENLISTMENT		SECOND-ENLISTMENT		CAREER	
	1977	1983	1977	1983	1977	1983
FINDS JOB						
DULL	20	14	13	11	10	7
SO-SO	24	22	19	17	10	14
INTERESTING	56	62	68	69	80	80
FEELS TALENTS USED						
LITTLE OR NOT AT ALL	34	25	20	19	12	13
FAIRLY WELL OR BETTER	66	74	81	80	88	86
FEELS TRAINING USED						
LITTLE OR NOT AT ALL	28	24	21	25	13	14
FAIRLY WELL OR BETTER	72	76	79	75	87	85
PLAN TO REENLIST						
NO	50	47	21	22	20**	21**
YES	50	52	77	76	80	78

* COLUMN TOTALS MAY NOT EQUAL 100 PERCENT IF SOME SURVEY PARTICIPANTS LEFT ITEMS BLANK

** INCLUDES THOSE WHO WILL RETIRE

IMPLICATIONS

This survey was conducted to assess the impact of several changes in the career ladder: the addition of bomb lift and diesel engine maintenance; the proliferation of electrical and electronic technology; and the ever increasing variety of equipment that career ladder members must maintain. While maintenance of diesel engines has become a responsibility of some AGE personnel, such maintenance does not yet appear widespread. Nevertheless, other factors, such as plans to field more diesel powered AGE, may justify inclusion in the basic course. Although maintenance of electrical circuits has become common place in the career ladder, maintenance of more advanced solid-state and integrated circuits appears limited mainly to TACS power generation personnel. Thus, the basic course should provide training in electrical circuit maintenance. Turning to the increasing variety of equipment maintained, this study found the career ladder still fairly homogenous, although some diversification has taken place since 1977, presumably because of the many kinds of AGE now maintained. Consequently, no need to break out the specialty into shreds appears necessary at the present time.

Perhaps the most important finding of this survey concerns the basic course. While the course gives good coverage of the tasks first-termers perform, the specific types of equipment taught in the course need to be reviewed. As noted, types of equipment maintained by large numbers of first-termers often were not covered in the basic course, while equipment maintained by very few were. While there may be good reasons for this situation--for example, principles for maintaining one type of generator may apply directly to another type--training managers should review each case identified in the training analysis section.

APPENDIX A

SPECIALTY JOB DESCRIPTIONS

TABLE A1

AGE MECHANICS
(GRP218)

TASKS		PERCENT MEMBERS PERFORMING (N=1,132)
I257	CLEAN AND ADJUST SPARK PLUGS	98
I311	REMOVE OR INSTALL SPARK PLUGS	97
N489	REMOVE OR INSTALL BATTERIES	96
N473	ADJUST BRAKE SYSTEMS	96
N479	PERFORM BRAKE SYSTEM OPERATIONAL CHECKS	92
N488	REMOVE OR INSTALL AGE TIRE, TUBE, OR WHEEL ASSEMBLIES	92
H237	SOLDER ELECTRICAL SYSTEM WIRING	88
I270	PERFORM ENGINE, MOTOR, OR GENERATOR OPERATIONAL CHECKS	87
I247	ADJUST MAGNETO OR DISTRIBUTOR POINTS	87
N494	REMOVE OR INSTALL HINGES, STAYS, OR FASTENERS	87
H238	SPLICE ELECTRICAL SYSTEM WIRING	86
N478	PAINT, STENCIL, OR MARK AGE	86
I259	CLEAN MAGNETO OR DISTRIBUTOR POINTS	86
I283	REMOVE OR INSTALL ENGINE EXHAUST MANIFOLDS, SEALS, GASKETS, OR COMMON HARDWARE	85
I275	REMOVE OR INSTALL CARBURETORS	84
H197	CLEAN CONTACTOR POINTS	84
I286	REMOVE OR INSTALL ENGINE FUEL PUMPS	82
H228	REMOVE OR INSTALL GAUGES	82
I300	REMOVE OR INSTALL FUEL LINES OR FITTINGS OTHER THAN DIESEL	81
N484	REFLECTORIZE AGE	80
E142	MAKE ENTRIES ON AFTO FORMS 349 (MAINTENANCE DATA COLLECTION RECORD	79
E143	MAKE ENTRIES ON AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG	79
I264	ISOLATE ENGINE, MOTOR, OR GENERATOR MECHANICAL MALFUNCTIONS	79
N486	REMOVE OR INSTALL AGE BRAKE ASSEMBLY COMPONENTS	79
I314	REMOVE OR INSTALL STARTERS	79
N485	REMOVE OR INSTALL AGE BRAKE ASSEMBLIES	78
N477	PACK WHEEL BEARINGS	78
N504	STRAIGHTEN PANELS, DOORS, OR COVERS	77
I289	REMOVE OR INSTALL ENGINE INTAKE MANIFOLDS, SEALS, GASKETS, OR COMMON HARDWARE	77
H190	ADJUST CONTRACTOR POINTS	77
I303	REMOVE OR INSTALL IGNITION COILS	76
N475	ISOLATE BRAKE SYSTEM MALFUNCTIONS	75
i268	LOAD TEST GENERATOR SETS	75
H235	REMOVE OR INSTALL VOLTAGE REGULATORS	75
I255	CHANGE GENERATORS OR ALTERNATORS	74

TABLE A2

NON-POWERED AGE MECHANICS
(GRP098)

TASKS		PERCENT MEMBERS PERFORMING (N=85)
G188	PERFORM NON-POWERED AGE PERIODIC INSPECTIONS	86
F169	PERFORM NON-POWERED AGE VISUAL OR SERVICE INSPECTIONS	79
E143	MAKE ENTRIES ON AFTO FORMs 350 (REPARABLE ITEM PROCESSING TAG)	79
N478	PAINT, STENCIL, OR MARK AGE	78
E142	MAKE ENTRIES ON AFTO FORMS 349 (MAINTENANCE DATA COLLECTION RECORD)	75
N477	PACK WHEEL BEARINGS	74
N484	REFLECTORIZE AGE	69
G182	PERFORM LIQUID OXYGEN OR NITROGEN EQUIPMENT PERIODIC INSPECTIONS	68
Q568	PERFORM GENERAL SHOP HOUSEKEEPING, SUCH AS CLEANING DRIP PANS AND SWEEPING FLOORS	64
N488	REMOVE OR INSTALL AGE TIRE, TUBE, OR WHEEL ASSEMBLIES	56
F163	PERFORM LIQUID OXYGEN OR NITROGEN EQUIPMENT VISUAL OR SERVICE INSPECTIONS	54
N473	ADJUST BRAKE SYSTEMS	52
E120	MAKE ENTRIES ON AF FORMs 2005 (ISSUE/TURN-IN REQUEST)	51
E108	MAINTAIN AFTO FORMS 244 AND AFTO FORMS 245 (SYSTEM/ EQUIPMENT STATUS RECORD AND CONTINUATION SHEET)	45
N479	PERFORM BRAKE SYSTEM OPERATIONAL CHECKS	44
Q567	PAINT SHOP FACILITIES, SUCH AS DESKS AND WALLS	42
P544	CLEAN VEHICLES	40
N494	REMOVE OR INSTALL HINGES, STAYS, OR FASTENERS	40
S612	TOW FLIGHTLINE NON-POWERED AGE	35
N486	REMOVE OR INSTALL AGE BRAKE ASSEMBLY COMPONENTS	35
N485	REMOVE OR INSTALL AGE BRAKE ASSEMBLIES	35
P555	PREPARE AGE FOR MOBILITY OR TRAINING EXERCISES	34
R579	PERFORM FOREIGN OBJECT DAMAGE (FOD) PREVENTION INSPECTIONS	32
N482	PREPARE AGE FOR PAINTING EXCEPT MAGNESIUM HOUSINGS	32
F170	PERFORM SHOP SUPPORT EQUIPMENT VISUAL OR SERVICE INSPECTIONS	32
P549	INSPECT VEHICLES FOR SAFETY OF OPERATIONS	29
N475	ISOLATE BRAKE SYSTEM MALFUNCTIONS	28
L421	REMOVE OR INSTALL HYDRAULIC LINES OR FITTINGS	27
L405	DRAIN, FLUSH, AND REFILL AGE HYDRAULIC RESERVOIRS	26
L436	REPLACE SEALS OR "O" RINGS IN HYDRAULIC SYSTEM COMPONENTS	26
G189	PERFORM SHOP SUPPORT EQUIPMENT PERIODIC INSPECTIONS	25
E148	MAKE ENTRIES ON CONDITION SERVICEABILITY TAGS	25

TABLE A3

AGE SERVICING AND DISPATCH PERSONNEL
(GRP079)

TASKS		PERCENT MEMBERS PERFORMING (N=311)
[illegible]	PERFORM AIRCRAFT SUPPORT GENERATOR VISUAL OR SERVICE INSPECTIONS	89
[illegible]	PERFORM HEATER VISUAL OR SERVICE INSPECTIONS	88
[illegible]	PERFORM GAS TURBINE COMPRESSOR VISUAL OR SERVICE INSPECTIONS	88
[illegible]	PERFORM [illegible] COMPRESSOR VISUAL OR SERVICE INSPECTIONS	[illegible]
[illegible]	[illegible] INSPECTIONS	[illegible]
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]
	[illegible]	[illegible]

TABLE A4

TACS POWER GENERATION PERSONNEL
(GRP147)

TASKS		PERCENT MEMBERS PERFORMING (N=95)
0516	INSTALL POWER CABLES	97
0511	EMPLACE GROUND RODS AND FENCE POSTS	92
[illegible]	MAINTAIN POWER CABLES	88
[illegible]	REMOVE OR INSTALL PRINTED CIRCUIT BOARDS	88
[illegible]	MAKE ENTRIES ON AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG) [illegible]	88
[illegible]	[illegible] SYSTEM WIRING	85
[illegible]	[illegible] CIRCUIT BOARD [illegible]	84
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

TABLE A5

SUPPLY PERSONNEL
(GRP077)

TASKS		PERCENT MEMBERS PERFORMING (N=139)
Q563	MAINTAIN BENCH STOCKS	80
Q566	MAINTAIN SPECIAL TOOLS OR SHOP EQUIPMENT OTHER THAN COMPOSITE TOOL KITS (CTK)	76
B38	MAINTAIN STATUS BOARDS, GRAPHS, OR CHARTS	75
E143	MAKE ENTRIES ON AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	74
B37	INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	73
Q562	MAINTAIN AWAITING MAINTENANCE OR PARTS FILES	72
Q561	ISSUE OR TURN-IN SPECIAL TOOLS OR SHOP EQUIPMENT OTHER THAN COMPOSITE TOOL KITS (CTK)	72
E11.	MAKE ENTRIES ON AF FORMS 1297 (TEMPORARY ISSUE RECEIPT)	71
E12.	MAKE ENTRIES ON AF FORMS 2005 (ISSUE/TURN-IN REQUEST)	70
.36'	MAINTAIN BULK BIN PARTS	69
E 34	MAINTAIN AF FORMS 261[illegible] SUPPLY CONTROL LOG)	68
.31E	[illegible] BULK BIN STOCK LEVELS	66
E 3H	MAKE ENTRIES ON AFTO FORMS 244 AND AFTO FORMS 245 (SYSTEM/ [illegible] AND [illegible] SHEET)	65
E 4H	MAKE ENTRIES ON [illegible] REPAIRABILITY TAGS	65
E 4	MAKE ENTRIES ON [illegible] MAINTENANCE DATA [illegible]	61
4H	[illegible]	55
	[illegible]	55
	[illegible]	55
	[illegible]	55
	[illegible]	54
	[illegible]	50
	[illegible]	50
	[illegible]	4
	[illegible]	44
	[illegible]	4
	[illegible]	4
	[illegible]	40
	[illegible]	40

TABLE A6

AGE NCOICs
(GRP075)

TASKS		PERCENT MEMBERS PERFORMING (N=139)
B25	COUNSEL PERSONNEL ON PERSONAL OR MILITARY PROBLEMS	94
C66	PREPARE APRs	93
E135	MAKE ENTRIES ON AF FORMS 623 AND AF FORMS 623A (ON-THE-JOB TRAINING RECORD AND CONTINUATION SHEET)	89
B39	SUPERVISE AEROSPACE GROUND EQUIPMENT MECHANICS (AFSC 42355)	88
A4	DETERMINE WORK PRIORITIES	86
D80	DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION	81
A17	PLAN WORK ASSIGNMENTS	79
E143	MAKE ENTRIES ON AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	78
B36	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	77
B37	INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	76
E136	MAKE ENTRIES ON AF FORMS 797 (JOB PROFICIENCY GUIDE CONTINUATION SHEET)	75
E142	MAKE ENTRIES ON AFTO FORMS 349 (MAINTENANCE DATA COLLECTION RECORD)	73
D79	COUNSEL TRAINEES ON TRAINING PROGRESS	73
A9	ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	71
A1	ASSIGN PERSONNEL TO DUTY POSITIONS	71
B41	SUPERVISE APPRENTICE AEROSPACE GROUND EQUIPMENT MECHANICS (AFSC 42335)	70
[illegible]	EVALUATE COMPLIANCE WITH PERFORMANCE STANDARDS	68
[illegible]	MAINTAIN AFTO FORMS 244 AND AFTO FORMS 245 (SYSTEM/ EQUIPMENT STATUS RECORD AND CONTINUATION SHEET)	68
[illegible]	[illegible]	68
[illegible]	[illegible] METHODS OR PROCEDURES	68
[illegible]	[illegible] FOR PROMOTION, DEMOTION, [illegible] SPECIAL AWARDS	68
[illegible]	[illegible] SERVICEABILITY TAGS	67
[illegible]	[illegible]	66
[illegible]	[illegible]	66
[illegible]	[illegible]	63
[illegible]	[illegible]	61
[illegible]	[illegible]	61
[illegible]	[illegible]	61
[illegible]	[illegible]	60
[illegible]	[illegible]	58
[illegible]	[illegible]	58

TABLE A7

QUALITY CONTROL INSPECTORS
(GRP105)

TASKS		PERCENT MEMBERS PERFORMING (N=51)
R574	INSPECT COMPLETED MAINTENANCE PERFORMANCE	98
R575	INSPECT COMPLETED SUPERVISOR PERFORMANCE	92
R583	PERFORM QUALITY CONTROL TASK EVALUATIONS	92
R576	PERFORM ACTIVITY INSPECTIONS	92
R577	PERFORM AGE AND NON-POWERED AGE QUALITY VERIFICATION INSPECTIONS	88
R572	EVALUATE SUGGESTED CHANGES TO TOs	88
R584	PERFORM SPOT CHECKS OF ACTIVITIES OR PERFORMANCES	86
E125	MAKE ENTRIES ON AF FORMS 2419 (ROUTING AND REVIEW OF QUALITY CONTROL REPORTS)	82
R579	PERFORM FOREIGN OBJECT DAMAGE (FOD) PREVENTION INSPECTIONS	82
R582	PERFORM QUALITY CONTROL SUPERVISOR EVALUATIONS	76
R581	PERFORM NON-AGE RELATED QUALITY CONTROL FUNCTIONS OTHER THAN AIRCRAFT	76
E126	MAKE ENTRIES ON AF FORMS 2420 (QUALITY CONTROL INSPECTION SUMMARY)	73
R585	PERFORM TO VERIFICATIONS, VALIDATIONS, OR PREPUBLICATION REVIEWS	73
R570	EVALUATE MAINTENANCE DEFICIENCY REPORTS (MDR)	71
B30	IMPLEMENT QUALITY CONTROL PROGRAMS	67
C49	EVALUATE COMPLIANCE WITH PERFORMANCE STANDARDS	65
C55	EVALUATE QUALITY CONTROL PROCEDURES	63
R580	PERFORM MOBILITY INSPECTIONS	63
C51	EVALUATE INSPECTION REPORTS OR PROCEDURES	61
R586	PERFORM TURN-IN OR ACCEPTANCE INSPECTIONS OF EQUIPMENT	59
R573	EVALUATE UNSATISFACTORY REPORTS (UR)	59
C56	EVALUATE SAFETY PROGRAMS	55
E141	MAKE ENTRIES ON AFTO FORMS 22 (TECHNICAL ORDER SYSTEM PUBLICATION IMPROVEMENT REPORT AND REPLY)	55
C65	INVESTIGATE MISHAPS OR INCIDENTS	53
C64	INSPECT MOBILITY EQUIPMENT	53
B31	IMPLEMENT SAFETY PROGRAMS	51
R571	EVALUATE MAINTENANCE SCHEDULING	49

TABLE A8

INSTRUCTORS
(GRP218)

TASKS		PERCENT MEMBERS PERFORMING (N=25)
D70	ADMINISTER TESTS	100
D79	COUNSEL TRAINEES ON TRAINING PROGRESS	96
D76	CONDUCT RESIDENT COURSE CLASSROOM TRAINING	92
B25	COUNSEL PERSONNEL ON PERSONAL OR MILITARY PROBLEMS	88
D98	SCORE TESTS	76
D90	EVALUATE PROGRESS OF RESIDENT COURSE STUDENTS	72
D80	DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION	72
D83	DEVELOP LESSON PLANS	56
E118	MAKE ENTRIES ON AF FORMS 173 (RECORD OF CAREER COUNSELING AND CAREER INTENT)	48
D102	WRITE TEST QUESTIONS	48
D94	MAINTAIN TRAINING EQUIPMENT	44
C49	EVALUATE COMPLIANCE WITH PERFORMANCE STANDARDS	36
E108	MAINTAIN AFTO FORMS 244 AND AFTO FORMS 245 (SYSTEM/ EQUIPMENT STATUS RECORD AND CONTINUATION SHEET)	36
B37	INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	32
B41	SUPERVISE APPRENTICE AEROSPACE GROUND EQUIPMENT MECHANICS (AFSC 42335)	28
D71	ADVISE STAFF OR UNIT PERSONNEL ON TRAINING MATTERS	28
B36	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	28
D97	PROCURE TRAINING AIDS, SPACE, OR EQUIPMENT	28
D91	EVALUATE TRAINING METHODS, TECHNIQUES, OR PROGRAMS	28
E143	MAKE ENTRIES ON AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	28
E142	MAKE ENTRIES ON AFTO FORMS 349 (MAINTENANCE DATA COLLECTION RECORD)	24
D74	CONDUCT AGE OPERATOR TRAINING CLASSES	20
D93	MAINTAIN TRAINING CHARTS OR GRAPHS	20
H209	MEASURE RESISTANCE OF AGE ELECTRICAL SYSTEMS OTHER THAN INTEGRATED OR SOLID STATE CIRCUITRY	16
E111	MAINTAIN TECHNICAL ORDER (TO) FILES	16
D84	DEVELOP RESIDENT COURSE OR CAREER DEVELOPMENT COURSE (CDC) CURRICULUM MATERIALS	16
B31	IMPLEMENT SAFETY PROGRAMS	12
D101	WRITE JUSTIFICATIONS FOR TRAINING FACILITIES, EQUIPMENT, PUBLICATIONS, OR MATERIAL	12
Q559	INSPECT COMPOSITE TOOL KITS (CTK)	12

END

DATE
FILMED

6-83

DTIC